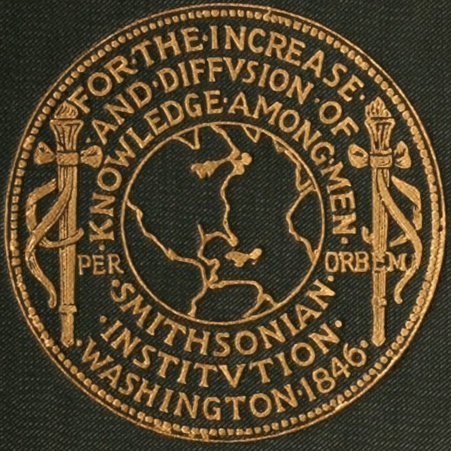
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THE SPIDER CRABS OF AMERICA

BY

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The scientific publications of the United States National Museum consist of two series, the *Proceedings* and the *Bulletins*.

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Since 1902 a series of octavo volumes containing papers relating to the botanical collections of the Museum, and known as the *Contributions from the National Herbarium*, has been published as bulletins.

The present work forms No. 129 of the *Bulletin series*.

William deC. Ravenel,
Administrative Assistant to the Secretary,
In Charge of the United States National Museum.

Washington, D. C., April 15, 1925.

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118. *Pitho anisodon* (6424), maxilliped, × 8.58.
119. *Pitho dispar*, female (24205), outline of front and orbits, from below, × 6.
120. *Leptopisa setirostris* (48658), maxilliped, × 9.16.
121. *Leptopisa setirostris*, female (48667), basal article of antenna with postorbital lobe, × 9.
122. *Anaptychus cornutus*, male, type. *a.* Antennal region, ventral view. *b.* Maxilliped. (After Stimpson.)
123. *Mithrax braziliensis*, male (19953), basal article of antenna, × 7.
124. *Mithrax hispidus* (17962), maxilliped, × 7.6.
125. *Mithrax* (*Mithraculus*) *sculptus*, male (14058), maxilliped, × 11.8.
126. *Mithrax* (*Mithraculus*) *sculptus*, male (14058), basal antennal article, × 5.
127. *Mithrax* (*Mithraculus*) *nodosus*, male (25673), maxilliped, × 5.4.
128. *Teleophrys tumidus* (40466), maxilliped, × 13.5.
129. *Teleophrys ornatus*, female (23774), carapace 5.6 mm. long. (After Rathbun.) *a.* Carapace, dorsal view. *b.* Ambulatory leg.
130. *Coelocerus spinosus* (9694), maxilliped, × 2.33.
131. *Stenocionops furcata* (43084), maxilliped, × 2.7.
132. *Macrocoeloma trispinosum* (43028), maxilliped, × 7.
133. *Macrocoeloma heptacanthum*, maxilliped. (After Bell.)
134. *Macrocoeloma heptacanthum*, female (21932), basal antennal article, with postorbital lobe, × 12.
135. *Macrocoeloma villosum*, Guayaquil, maxilliped. (After Bell.)
136. *Macrocoeloma laevigatum*, male (46933), basal antennal article, × 6.66.
137. *Macrocoeloma eutheca* (46932), basal antennal article, × 11.
138. *Macrocoeloma intermedium* (9492), basal antennal article, × 6.
139. *Microphrys bicornutus* (7580), maxilliped, × 8.4.
140. *Microphrys platysoma* (20292), basal antennal article, × 13.3.
141. *Microphrys antillensis*, male (43017), total length of carapace 14 mm., basal antennal article.
142. *Microphrys aculeatus* (25677), basal antennal article, × 12.7.
143. *Microphrys branchialis* (21576), basal antennal article, × 13.2.
144. *Microphrys interruptus* (48573), basal antennal article, × 16.
145. *Microphrys triangulatus* (21943), basal antennal article, × 14.
146. *Parthenope agonus* (51009), maxilliped, × 11.7.
147. *Thyrolambrus astroides* (9515), maxilliped, × 12.
148. *Solenolambrus typicus* (50388), maxilliped, × 17.7.
149. *Leiolambrus punctatissimus* (17366), maxilliped, × 19.2.

150. *Mesorhoea sexspinosa* (50456), maxilliped, × 33.8.
151. *Cryptopodia concava* (49226), maxilliped, × 28.
152. *Heterocrypta granulata* (8485), maxilliped, × 14.6.
153. *Heterocrypta lapidea*, female (20324), carapace 5.9 mm. long, dorsal view. (After Rathbun.)

PLATES

1. *Dasygyius depressus.*
2. *Stenorynchus seticornis.*
3. *Stenorynchus seticornis.*
4. *Stenorynchus debilis.*
5. *Stenorynchus debilis.*
6. *Metoporhaphis calcarata.*
7. *Metoporhaphis calcarata.*
8. *Anomalothir frontalis* and *furcillatus.*
9. *Anomalothir frontalis* and *furcillatus.*
10. *Achaeopsis thomsoni.*
11. *Podochela riisei* and *lobifrons.*
12. *Podochela sidneyi.*
13. *Podochela sidneyi.*
14. *Podochela vestita.*
15. *Podochela margaritaria.*
16. *Podochela macrodera.*
17. *Podochela gracilipes.*
18. *Podochela hemphillii.*
19. *Podochela curvirostris.*
20. *Podochela lamelligera* and *barbarensis.*
21. *Podochela latimanus.*
22. *Inachoides microrhynchus, laevis.*
23. *Eucinetops blakiana* and *panamensis*, and *Anasimus fugax*
24. *Oregonia gracilis.*
25. *Oregonia gracilis.*
26. *Oregonia bifurca.*
27. *Oregonia bifurca.*
28. *Oregonia bifurca.*
29. *Collodes robustus.*
30. *Eurypodius latreillii.*
31. *Eurypodius latreillii.*
32. *Arachnopsis filipes* and *Aepinus septemspinosus.*
33. *Euprognatha rastellifera* and *rastellifera marthae.*
34. *Euprognatha rastellifera acuta, gracilipes,* and *bifida.*
35. *Eurypodius longirostris, Euprognatha rastellifera,* and *granulata.*
36. *Collodes granosus, obesus, trispinosus,* and *rostratus.*
37. *Collodes tenuirostris.*
38. *Collodes levis, inermis,* and *leptocheles.*
39. *Batrachonotus fragosus* and *nicholsi.*
40. *Collodes tumidus* and *Pyromaia tuberculata.*
41. *Pyromaia cuspidata.*
42. *Pyromaia arachna.*
43. *Pyromaia arachna.*
44. *Acanthonyx petiverii.*
45. *Epialtus kingsleyi, dilatatus,* and *bituberculatus.*
46. *Epialtus hiltoni* and *sulcirostris.*
47. *Epialtus minimus* and *sulcirostris.*

48. *Epialtus dilatatus forma elongata.*
49. *Menaethiops portoricensis*, *Mocosoa crebripunctata*, and *Eupleurodon peruvianus.*
50. *Taliepus nuttallii.*
51. *Taliepus nuttallii.*
52. *Taliepus marginatus.*
53. *Taliepus marginatus.*
54. *Taliepus dentatus.*
55. *Taliepus dentatus.*
56. *Pugettia producta.*
57. *Pugettia producta.*
58. *Pugettia gracilis.*
59. *Pugettia dalli* and *venetiae.*
60. *Mimulus foliatus.*
61. *Leucippa pentagona.*
62. *Sphenocarcinus corrosus.*
63. *Sphenocarcinus agassizi.*
64. *Loxorhynchus grandis.*
65. *Loxorhynchus grandis.*
66. *Loxorhynchus crispatus.*
67. *Loxorhynchus crispatus.*
68. *Rochinia crassa.*
69. *Rochinia crassa.*
70. *Rochinia hystrix.*
71. *Rochinia hystrix.*
72. *Rochinia umbonata.*
73. *Rochinia umbonata*, *Lissa brasiliensis*, and *bicarinata.*
74. *Libidoclaea smithii.*
75. *Libidoclaea smithii.*
76. *Libidoclaea granaria.*
77. *Libidoclaea granaria.*
78. *Libidoclaea granaria.*
79. *Scyra acutifrons.*
80. *Trachymaia cornuta.*
81. *Notolopas lamellatus.*
82. *Leurocyclus gracilipes.*
83. *Leurocyclus gracilipes.*
84. *Chionoecetes opilio.*
85. *Chionoecetes opilio.*
86. *Chionoecetes bairdi.*
87. *Chionoecetes bairdi.*
88. *Chionoecetes tanneri.*
89. *Chionoecetes tanneri.*
90. *Chionoecetes angulatus.*
91. *Chionoecetes angulatus.*
92. *Hyas araneus.*
93. *Hyas araneus.*
94. *Hyas coarctatus.*
95. *Hyas coarctatus.*
96. *Hyas coarctatus alutaceus.*
97. *Hyas coarcatus alutaceus.*
98. *Pelia pacifica* and *mutica.*
99. *Pelia pacifica* and *tumida.*
100. *Pelia rotunda.*

101. *Micropisa violacea.*
102. *Nibilia antilocapra.*
103. *Nibilia antilocapra.*
104. *Herbstia depressa* and *pyriformis.*
105. *Herbstia camptacantha, edwardsii,* and *tumida.*
106. *Herbstia parvifrons.*
107. *Chorinus heros.*
108. *Holoplites armata.*
109. *Libinia erinacea.*
110. *Libinia emarginata.*
111. *Libinia emarginata.*
112. *Libinia emarginata,* variety.
113. *Libinia emarginata,* variety.
114. *Libinia dubia.*
115. *Libinia dubia.*
116. *Libinia rhomboidea.*
117. *Libinia rhomboidea.*
118. *Libinia ferreirae.*
119. *Libinia ferreirae.*
120. *Libinia spinosa.*
121. *Libinia spinosa.*
122. *Libinia dubia* (holotype of *subspinosa*) and *rostrata.*
123. *Paramithrax bäckströmi.*
124. *Hemus cristulipes* and *analogus,* and *Thoe aspera.*
125. *Thoe puella, sulcata,* and *panamensis.*
126. *Picroceroides tubularis.*
127. *Pitho aculeata.*
128. *Pitho lherminieri* and *mirabilis.*
129. *Pitho lherminieri* and *mirabilis.*
130. *Pitho sexdentata* and *picteti.*
131. *Pitho anisodon.*
132. *Pitho dispar, quadridentata,* and *laevigata.*
133. *Pitho dispar, quadridentata,* and *laevigata.*
134. *Leptopisa setirostris* and *Anaptychus cornutus.*
135. *Mithrax spinosissimus.*
136. *Mithrax acuticornis* and *spinipes.*
137. *Mithrax bahamensis* and *cornutus.*
138. *Mithrax holderi* and *pilosus.*
139. *Mithrax hemphilli.*
140. *Mithrax orcutti.*
141. *Mithrax orcutti.*
142. *Mithrax bellii.*
143. *Mithrax bellii.*
144. *Mithrax verrucosus.*
145. *Mithrax hispidus.*
146. *Mithrax hispidus.*
147. *Mithrax braziliensis, tortugae,* and *hispidus.*
148. *Mithrax caribbaeus.*
149. *Mithrax caribbaeus.*
150. *Mithrax pleuracanthus.*
151. *Mithrax tuberculatus* and *sinensis.*
152. *Mithrax (Mithraculus) sculptus.*
153. *Mithrax (Mithraculus) coryphe.*

154. *Mithrax* (*Mithraculus*) *areolatus*, and *denticulatus.*
155. *Mithrax* (*Mithraculus*) *nodosus.*
156. *Mithrax* (*Mithraculus*) *forceps.*
157. *Mithrax* (*Mithraculus*) *ruber.*
158. *Mithrax* (*Mithraculus*) *cinctimanus.*
159. *Teleophrys cristulipes, ornatus, pococki,* and *tumidus.*
160. *Stenocionops furcata.*
161. *Stenocionops furcata.*
162. *Stenocionops contigua.*
163. *Stenocionops contigua.*
164. *Stenocionops furcata coelata.*
165. *Stenocionops triangulata* and *spinosissima.*
166. *Macrocoeloma trispinosum* and *trispinosum nodipes.*
167. *Macrocoeloma trispinosum.*
168. *Macrocoeloma trispinosum*, variety, and *trispinosum nodipes.*
169. *Macrocoeloma diplacanthum* and *laevigatum.*
170. *Macrocoeloma eutheca, intermedium*, and *concavum.*
171. *Macrocoeloma eutheca, intermedium*, and *concavum.*
172. *Macrocoeloma subparallelum.*
173. *Macrocoeloma heptacanthum* and *septemspinosum.*
174. *Microphrys interruptus* and *Macrocoeloma camptocerum.*
175. *Microphrys bicornutus.*
176. *Microphrys platysoma, antillensis*, and *branchialis.*
177. *Microphrys triangulatus.*
178. *Parthenope agonus.*
179. *Parthenope agonus.*
180. *Parthenope* (*Platylambrus*) *serrata.*
181. *Parthenope* (*Platylambrus*) *serrata.*
182. *Parthenope* (*Platylambrus*) *pourtalesii.*
183. *Parthenope* (*Platylambrus*) *pourtalesii.*
184. *Parthenope* (*Platylambrus*) *exilipes.*
185. *Parthenope* (*Platylambrus*) *exilipes.*
186. *Parthenope* (*Platylambrus*) *fraterculus.*
187. *Parthenope* (*Platylambrus*) *fraterculus.*
188. *Parthenope* (*Platylambrus*) *depressiuscula.*
189. *Parthenope* (*Pseudolambrus*) *excavata.*
190. *Parthenope* (*Platylambrus*) *guerini* and *fraterculus.*
191. *Parthenope* (*Platylambrus*) *guerini.*
192. *Solenolambrus typicus.*
193. *Solenolambrus typicus.*
194. *Solenolambrus decemspinosus, tenellus*, and *portoricensis.*
195. *Aethra scruposa scutata.*
196. *Thyrolambrus astroides.*
197. *Thyrolambrus erosus.*
198. *Leiolambrus punctatissimus.*
199. *Leiolambrus nitidus.*
200. *Mesorhoea sexspinosa.*
201. *Mesorhoea bellii.*
202. *Cryptopodia hassleri* and *concava*, and *Halicarcinus planatus.*
203. *Heterocrypta granulata* and *macrobrachia.*
204. *Heterocrypta occidentalis.*
205. *Heterocrypta occidentalis.*
206. *Anomalothir furcillatus.*
207. *Anomalothir frontalis.*

208. *Podochela grossipes* and *riisei.*
209. *Podochela margaritaria* and *hemphillii.*
210. *Podochela curvirostris.*
211. *Anasimus fugax.*
212. *Erileptus spinosus.*
213. *Erileptus spinosus.*
214. *Anasimus latus.*
215. *Eurypodius latreillii.*
216. *Euprognatha rastellifera marthae.*
217. *Collodes granosus*, *obesus*, and *armatus.*
218. *Pyromaia tuberculata* and *Collodes tumidus.*
219. *Acpinus septemspinosus*, *Arachnopsis filipes*, and *Eucinetops rubellula.*
220. *Epialtus brasiliensis* and *Taliepus marginatus.*
221. *Taliepus marginatus.*
222. *Acanthonyx petiverii*, *Leucippa pentagona*, and *Esopus crassus.*
223. *Sphenocarcinus agassizi* and *corrosus.*
224. *Chorilia longipes* and *Scyra acutifrons.*
225. *Chorilia longipes turgida.*
226. *Rochinia crassa.*
227. *Rochinia tanneri* and *cornuta.*
228. *Rochinia occidentalis.*
229. *Rochinia gracilipes* and *occidentalis.*
230. *Rochinia vesicularis.*
231. *Libidoclaea granaria* and *smithii.*
232. *Oplopisa spinipes*, *Trachymaia cornuta*, and *Leurocyclus tuberculosus.*
233. *Leurocyclus tuberculosus.*
234. *Chionoecetes tanneri.*
235. *Hyas lyratus.*
236. *Pisoides edwardsii.*
237. *Notolopas brasiliensis.*
238. *Notolopas lamellatus* and *brasiliensis.*
239. *Nibilia antilocapra.*
240. *Herbstia edwardsii*, *pyriformis*, and *camptacantha.*
241. *Pelia pulchella* and *Micropisa violacea.*
242. *Libinia rostrata.*
243. *Libinia setosa.*
244. *Libinia mexicana* and *Lepteces ornatus.*
245. *Libinia rhomboidea* and *ferreirae*, and *Holoplites armata.*
246. *Lissa tuberosa* and *aurivilliusi* and *Chorinus heros.*
247. *Maiopsis panamensis.*
248. *Thersandrus compressus* and *Hemus cristulipes.*
249. *Thoe erosa*, *Temnonotus granulosus*, and *simplex.*
250. *Pitho quinquedentata*, *sexdentata*, *quadridentata*, and *laevigata.*
251. *Pitho aculeata* and *anisodon.*
252. *Pitho picteti* and *lherminieri.*
253. *Pitho mirabilis* and *Leptopisa setirostris.*
254. *Anaptychus cornutus* and *Picroceroides tubularis.*
255. *Mithrax rostratus.*
256. *Mithrax cornutus.*
257. *Mithrax acuticornis* and *holderi.*
258. *Mithrax pilosus.*
259. *Mithrax bahamensis* and *hemphilli.*
260. *Mithrax sinensis.*
261. *Mithrax laevimanus.*

262. *Mithrax pygmaeus, spinipes,* and *armatus,* and *Teleophrys cristulipes* and *ornatus.*
263. *Coelocerus spinosus.*
264. *Coelocerus spinosus, Stenocionops spinosissima,* and *ovata.*
265. *Stenocionops spinosissima.*
266. *Stenocionops triangulata* and *contigua.*
267. *Stenocionops spinimana.*
268. *Stenocionops macdonaldi.*
269. *Macrocoeloma diplacanthum, villosum,* and *heptacanthum.*
270. *Microphrys branchialis* and *Macrocoeloma camptocerum.*
271. *Microphrys aculeatus* and *weddelli.*
272. *Tyche emarginata.*
273. *Tyche lamellifrons* and *emarginata.*
274. *Dasygyius gibbosus* and *depressus.*
275. *Parthenope agonus, hyponca,* and (*Platylambrus*) *serrata.*
276. *Parthenope* (*Platylambrus*) *pourtalesii.*
277. *Parthenope* (*Platylambrus*) *exilipes* and *Tutankhamen cristatipes.*
278. *Parthenope* (*Pseudolambrus*) *triangula* and (*Platylambrus*) *guerini.*
279. *Solenolambrus typicus* and *tenellus.*
280. *Mesorhoea bellii* and *Thyrolambrus astroides.*
281. *Leiolambrus nitidus* and *Thyrolambrus erosus.*
282. *Heterocrypta granulata* and *macrobrachia,* and *Cryptopodia concava.*
283. *Halicarcinus planatus.*

THE SPIDER CRABS OF AMERICA

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INTRODUCTION

This volume is the second of the handbooks projected for the study of American crabs, the first volume of which, "The Grapsoid Crabs of America," forms Bulletin 97 of the United States National Museum. The introductory remarks in that bulletin under the headings "Sources of material," "Special researches," "Acknowledgments," and "Glossary of terms used" apply also to this bulletin. The author has been able to examine much rare and type material at the Museum of Comparative Zoölogy and the Philadelphia Academy of Natural Sciences, and a number of photographs of the same have been contributed by those museums through the courtesy of Mr. Samuel Henshaw and Dr. H. A. Pilsbry; while Dr. W. T. Calman of the British Museum has furnished a photograph of the type-specimen of *Lambrus crenatus* White, which is here reproduced. I am constrained to acknowledge also my indebtedness to my various colleagues in the United States National Museum who have assisted in getting this volume into shape for publication.

EXPLANATION OF MEASUREMENTS AND ABBREVIATIONS USED

Explanation of measurements

The length of the carapace, unless otherwise stated, is measured on the median line, from the anterior to the posterior margin.

The width of the carapace is measured at the widest part.

The fronto-orbital width or exorbital width is measured from the outer angle of one orbit to the outer angle of the other.

The length of the rostrum in the Majidae is usually measured to the angle which it forms with the orbit; in the Parthenopidae and Hymenosomidae it is measured from the tip to the posterior line of the upper margins of the orbits.

The width of the rostrum is measured at its posterior end.

The length of the segments of the chelipeds and legs is measured on the upper or anterior margin. The length of the whole cheliped or leg is measured on the lower margin, from the articulation of the coxa with the sternum to the tip of the dactylus.

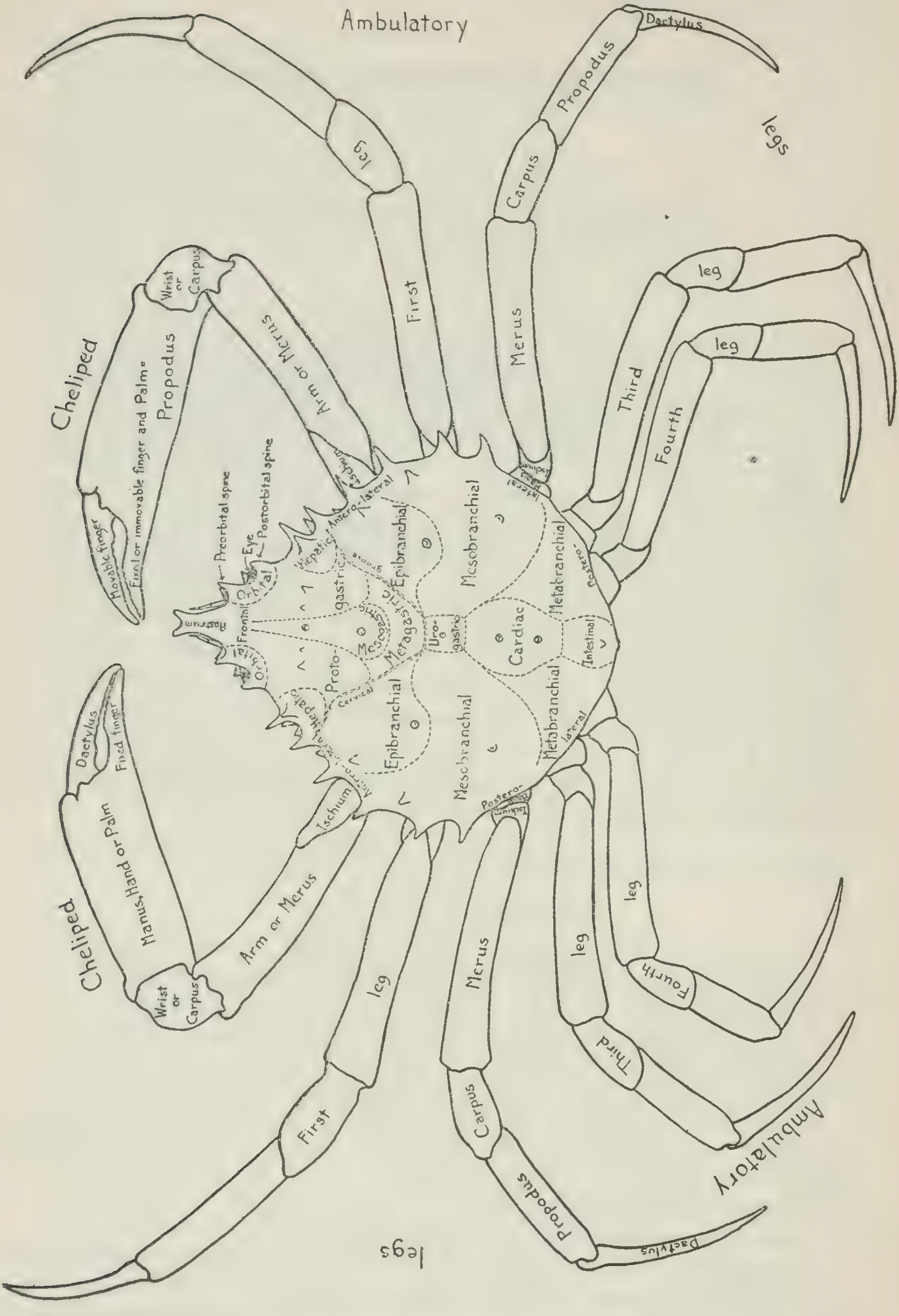
Ambulatory
legs
Dactylus
Propodus
Carpus
Merus
First
leg
leg
Third
leg
Fourth
Cheliped
Wrist or Carpus
Propodus
Movable finger and Palm=
Fixed or immovable finger and Palm=
Movable finger
Arm or Merus
Ischium
Preorbital spine
Eye
Postorbital spine
Orbital
Frontal
Rostrum
Orbital
Hepatic
Antero-lateral
Hepatic
Antero-lateral
Protogastric
Mesogastric
Metagastric
Groove
Cervical
Epibranchial
Epibranchial
Mesobranchial
Mesobranchial
Urogastric
Cardiac
Intestinal
Metabranchial
Metabranchial
Postero-lateral
Postero-lateral
Ischium
Cheliped
Dactylus
Fixed finger
Manus, Hand or Palm
Wrist or Carpus
Arm or Merus
Ischium
First
leg
Merus
Carpus
Propodus
Dactylus
leg
Third
leg
Fourth
Ambulatory
legs

FIG. 1.—DIAGRAMMATIC DORSAL VIEW OF A SPIDER CRAB, SHOWING THE TERMS USED IN DESCRIPTION. BY W. L. SCHMITT.

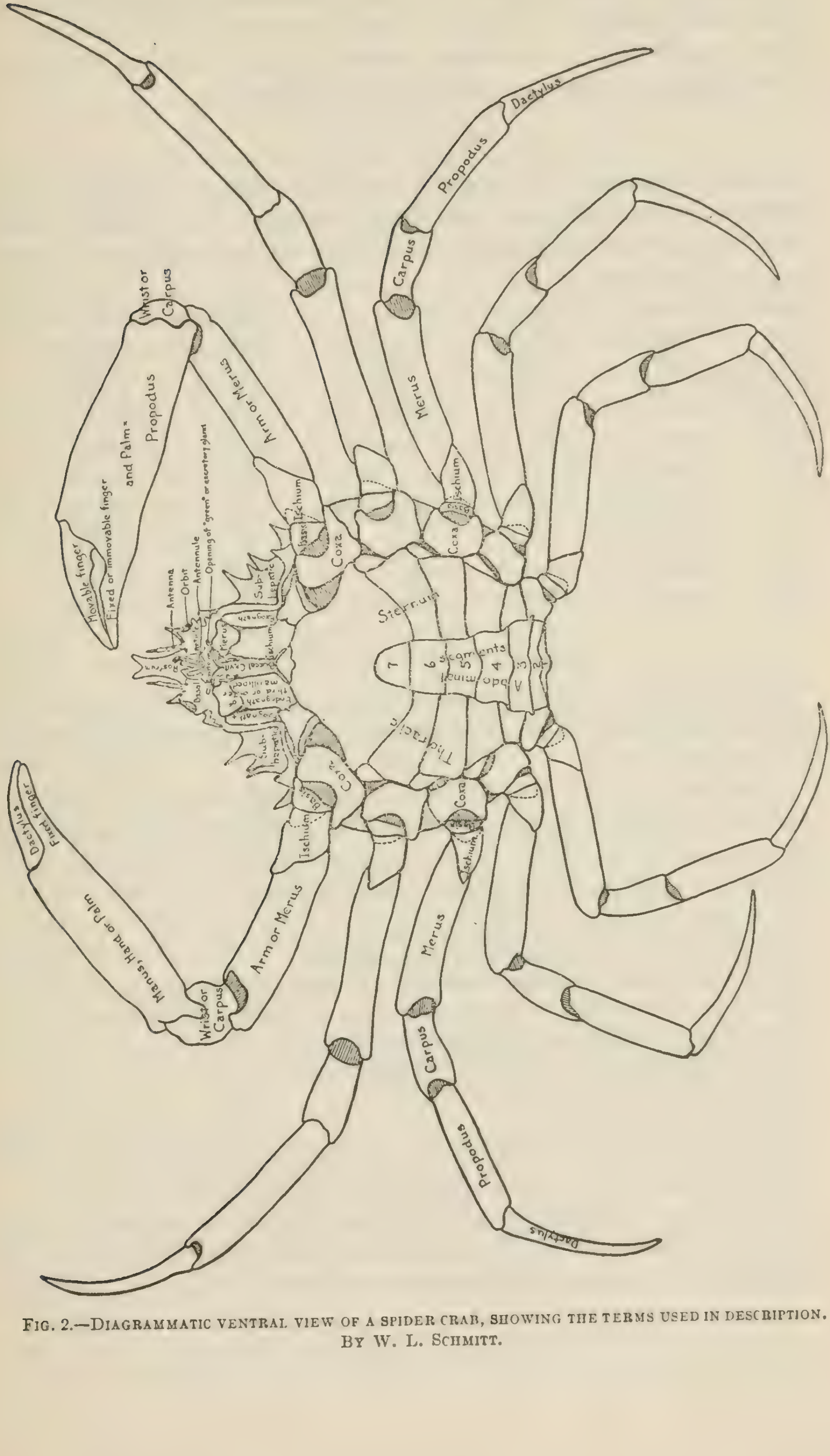
Dactylus
Propodus
Carpus
Merus
Ischium
Coxa
Wrist or Carpus
Propodus
and Palm
Arm or Merus
Movable finger
Fixed or immovable finger
Antenna
Orbit
Antennule
Opening of "green" or excretory gland
Sub-hepatic
Basis
Ischium
Coxa
Exognath
Merus
Ischium
Rostrum
Basal
Buccal Cavity
Endognath of third or outer maxilliped
Exognath
Sub-hepatic
Sternum
Abdominal segments
7
6
5
4
3
2
A
Thoracic
Coxa
Basis
Ischium
Coxa
Ischium
Dactylus
Fixed finger
Manus, Hand or Palm
Arm or Merus
Wrist or Carpus
Merus
Carpus
Propodus
Dactylus

Fig. 2.—Diagrammatic ventral view of a spider crab, showing the terms used in description. By W. L. Schmitt.

The width of the segments of the chelipeds and legs is measured at the widest part.

The length of the immovable finger is measured from the tip to the extremity of the sinus between the fingers.

Character of bottom

Under "Material examined," the abbreviations indicating the character of the bottom are those employed by the Bureau of Fisheries. Nouns begin with a capital, adjectives with a small letter.

bk	black	grsy	grassy	S	sand
br	brown	gy	gray	sctrd	scattered
brk	broken	hrd	hard	sft	soft
bu	blue	lge	large	Sh	shells
Co	coral	lt	light	shy	shelly
crs	coarse	M	mud	sm	small
dk	dark	Oz	ooze	Sp	specks
fne	fine	P	pebbles	St	stones
For	foraminifera	Ptr	pteropod	stky	sticky
G	gravel	R	rock	vol	volcanic
Glob	globigerina	rd	red	W	seaweed
gn	green	Rf	reef	wh	white
Grs	grass	rky	rocky	yl	yellow

Additional abbreviations and notes

In the synonymy an attempt has been made to give all the different names or combinations which have been used, but not all the references to a species.

In the lists under "Material examined" a number in parenthesis following an indication of a specimen or specimens denotes a catalogue number of the United States National Museum unless otherwise indicated. The following abbreviations are used:

Amer. Mus. = American Museum of Natural History, New York.
B. S. N. H. = Boston Society of Natural History.
Cal. Acad. = Museum of the California Academy of Sciences, San Francisco.
M. C. Z. = Museum of Comparative Zoölogy, at Harvard University.
Mus. S. U. I. = Museum of the State University of Iowa.
Phila. Acad. = Museum of the Philadelphia Academy of Natural Sciences.
Y. U. M. = Yale University Museum.
y = young.

The words "U. S. Fisheries" should be understood before "Str. *Albatross*," "Str. *Fish Hawk*," or "Sch. *Grampus*."

In the same lists have been entered, besides specimens in the National Museum, many types examined elsewhere, as well as such specimens from other collections as increased our knowledge of the range of the species, but for lack of space no attempt has been made to record all of the many specimens examined in museum and private collections.

THE SPIDER CRABS OR OXYRHYNCHA OF AMERICA

The term Oxyrhyncha owes its origin to Latreille,[1] who used it, with a different spelling, in 1803 for one of two divisions of the section "Brachyuri" or short-tailed crabs as opposed to the "Macrouri" which included the long-tailed crabs as well as the shrimps. Latreille's "Oxyrinchi" included not only the so-called spider-crabs of to-day, but the Oxystomes and the Euryalidae or Corystidae. In 1834, Milne Edwards restricted the term Oxyrhinques[2] to spider crabs of the families known herein as Majidae and Parthenopidae. Dana in 1852[3] used the expression "Maioidea or Oxyrhyncha." Miers later[4] adopts the name Oxyrhyncha with the same limits, while Borradaile, 1907,[5] adds the family Hymenosomidae to the Oxyrhyncha. It is in the latter sense that the superfamily is used in the following pages.

By far the greater part of the spider crabs belong to the family Majidae (=Inachidae). The members of this family have usually long, slender legs, which suggest the name "spider crab"; the chelipeds also are elongate, but are in most cases heavier than the ambulatory legs. The shape of the body is very diverse, varying from extremely long and narrow with a filiform beak, to broadly oblong or rotund with a short, and either bifid or entire rostrum. All are marine animals and occur in shallow water as well as in considerable depths, exceeding 1,600 fathoms, and on all sorts of bottom, from soft mud to coral rock.

Spider crabs are notable for their habit of decorating or masking themselves by placing bits of foreign substances on their backs and appendages. The crab picks up, one by one, fragments of seaweed, hydroids, alcyonarians, sponges, or other suitable objects, by means of its claws, using one or the other as needed. He then thrusts each piece into his mouth seemingly to soften the end, then places it on his shell where it is held in place by the hooked hairs which are always present to some extent on these crabs, forming a regular pattern of bands and patches especially on the anterior and lateral portions of the carapace. The artificial covering thus produced serves as a disguise, the crab having the same appearance as its environment.[6] Among the genera most commonly decorated are *Libinia*, the shore crab of the eastern coast of the United States, the various species of *Hyas*, and *Oregonia*. The members of the Acanthonychinae are less likely to be obscured than those of the other subfamilies, on account of their smoother carapaces.

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[1] Oxyrinchi (Oxyrinques) Latreille, Hist. Nat. Crust., vol. 6, *an* XI (1803), p. 85.

[2] Oxyrhinques Milne Edwards, Hist. Nat. Crust., vol. 1, 1834, pp. 263 and 266. Cancériens Cryptopodes (formed for the genus *Oethra*) Milne Edwards, same reference, p. 368.

[3] Maioidea Dana, Crust. U. S. Expl. Exped., vol. 1, 1852, p. 66. Maioidea, or Oxyrhyncha, Dana, same reference, p. 75.

[4] On the Classification of the Maioid Crustacea or Oxyrhyncha, with a Synopsis of the Families, Subfamilies, and Genera. Journ. Linn. Soc., Zool., vol. 14, 1879, pp. 634–673, pls. 12 and 13.

[5] On the Classification of the Decapod Crustaceans. Ann. Mag. Nat. Hist., ser. 7, vol. 19, 1907, p. 480.

The Parthenopidae are relatively few in number of specimens as well as species. Their appearance is so different from that of the Majidae that they can be distinguished at a glance. They are usually small; the largest ones in American waters do not exceed 4 cm. in carapace-width, with the exception of *Aethra* which attains a width of 9 cm. The carapace is in general broad-triangular or pentagonal with angled corners and facets. The smoother sorts resemble small chips of stone while the tubercled and eroded species simulate rock surfaces. Hooked hairs are nearly always absent. The ambulatory legs are usually small and delicate, the chelipeds immensely long and heavy in American species, the elongate hand terminated by short fingers. The Parthenopidae differ from the Majidae also in having small, complete orbits and an insignificant basal antenna-segment which is not soldered to the epistome or front. They incline toward the Brachyrhyncha.[7]

The Hymenosomidae form a small family, the species inhabiting chiefly the southern hemisphere, India, or Japan. They are small marine or estuarine crabs, with a thin, flat, triangular or subcircular carapace. Only one species is American, distributed in southern Chile, Patagonia, and various subantarctic islands eastward to New Zealand. This family is by many authors associated with the Grapsoid crabs,[8] but is included here chiefly on account of the form of the outer antennae, the longitudinal position of the antennules, the presence of a rostrum, and the absence of orbits.[9]

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[6] For details of methods and motives, the following works should be consulted:

Aurivillius, Carl W. S.: Die Maskirung der Oxyrrhynchen Dekapoden. K. Svenska Vetensk.-Akad. Handl., vol. 23, Stockholm, 1889, 71 pp., 5 pls.

Pascoe, Francis P.: Foreign Substances attached to Crabs. Nature, Dec. 26, 1889, p. 176.

Garstang, Walter: Foreign Substances attached to Crabs. Nature, Mar. 27, 1890, p. 490.

Bateson, W.: Notes on the Senses and Habits of some Crustacea. Journ. Marine Biol. Assoc. United Kingdom, n. s., vol. 1, No. 3, Apr. 1890, pp. 213–214.

Stebbing, Thomas R. R.: A History of Crustacea. The International Scientific Series. New York, 1893. Pp. 112–116.

Sayce, O. A.: Some peculiar Habits of Crabs. Victorian Naturalist, vol. 17, Melbourne, 1900, pp. 74–75.

Minkiewicz, Romuald: The Instinct of Self-Concealment and the Choice of Colors in the Crustacea. Rev. gén. Sci., Paris, 20th year, No. 3, Feb. 15, 1909; Transl. in Smithson. Rept. for 1909 (1910), pp. 465–485.

Pearse, A. S.: The Influence of Different Color Environments on the Behavior of Certain Arthropods. Journ. Anim. Behavior, vol. 1, No. 2, 1911, pp. 79–110. With bibliography.

Milligan, H. N.: The Habits of the Four-horned Spider Crab. Zoologist, ser. 4, vol. 19, 1915, pp. 248–252.

Nininger, H. H.: Crabs taken at Laguna Beach in the summer of 1916. Pomona College Journ. Entom. and Zool., vol. 10, No. 2, June, 1918, pp. 36–42.

[7] See Ortmann, Zool. Jahrb., vol. 7, Syst., 1893, p. 412.

[8] See Alcock, Journ. Asiat. Soc. Bengal, vol. 69, 1900, pp. 280, 282, 285, 291, and 385.

[9] See Ortmann, Bronn's Thier Reich, vol. 5, pt. 2, Arthropoda, 1898, p. 1168.

ANALOGOUS SPECIES ON OPPOSITE SIDES OF THE CONTINENT

Family MAJIDAE

Subfamily INACHINAE

Atlantic	Pacific
Stenorynchus seticornis.	*Stenorynchus debilis.*
Podochela riisei.	*Podochela vestita.*
Podochela gracilipes.	*Podochela hemphillii.*
Eucinetops blakiana.	*Eucinetops panamensis.*
Euprognatha *rastellifera.* *Euprognatha* *rastellifera marthae.*	*Euprognatha bifida.*
Collodes trispinosus.	*Collodes granosus.*
Collodes rostratus.	*Collodes tenuirostris.*
Collodes inermis.	*Collodes tumidus.*
Batrachonotus fragosus.	*Batrachonotus nicholsi.*

Subfamily ACANTHONYCHINAE

Sphenocarcinus corrosus.	*Sphenocarcinus agassizi.*

Subfamily PISINAE

Pelia mutica.	*Pelia tumida.*
Herbstia depressa.	*Herbstia tumida.*
Lissa bicarinata.	*Lissa aurivilliusi.*
Lissa brasiliensis.	*Lissa tuberosa.*

Subfamily MAJINAE

Hemus cristulipes.	*Hemus analogus.*
Thoe puella.	*Thoe sulcata.*
Pitho aculeata.	*Pitho picteti.*
Pitho lherminieri.	*Pitho quinquedentata.*
Pitho mirabilis.	*Pitho sexdentata.*
Mithrax spinosissimus.	*Mithrax rostratus.*
Mithrax acuticornis.	*Mithrax spinipes.*
Mithrax hemphilli.	*Mithrax orcutti.*
Mithrax verrucosus.	*Mithrax bellii.*
Mithrax coryphe.	*Mithrax denticulatus.*
Mithrax ruber.	*Mithrax areolatus.*
Teleophrys pococki.	*Teleophrys cristulipes.*
Stenocionops furcata.	*Stenocionops contigua.*
Stenocionops spinimanus.	*Stenocionops macdonaldi.*
Macrocoeloma septemspinosum.	*Macrocoeloma heptacanthum*
Macrocoeloma subparallelum.	*Macrocoeloma villosum.*
Microphrys antillensis.	*Microphrys platysoma.*
Microphrys interruptus.	*Microphrys branchialis.*
Tyche emarginata.	*Tyche lamellifrons.*

Family PARTHENOPIDAE

Parthenope (*Platylambrus*) *pourtalesii.*	*Parthenope* (*Platylambrus*) *exilipes.*
Parthenope (*Platylambrus*) *guerini.*	*Parthenope* (*Platylambrus*) *depressiuscula.*
Thyrolambrus astroides.	*Thyrolambrus erosus.*
Solenolambrus typicus.	*Solenolambrus arcuatus.*
Leiolambrus nitidus.	*Leiolambrus punctatissimus.*
Mesorhoea sexspinosa.	*Mesorhoea bellii.*
Cryptopodia concava.	*Cryptopodia hassleri.*
Heterocrypta lapidea.	*Heterocrypta macrobrachia.*

SPECIES ON BOTH SIDES OF THE CONTINENT

Family MAJIDAE

Subfamily Inachinae

Inachoides laevis.
Eurypodius latreillii.

Subfamily Acanthonychinae

Acanthonyx petiverii.
Epialtus bituberculatus (*fide* Milne Edwards).
Taliepus marginatus (*fide* Bell).
Leucippa pentagona.

Subfamily Pisinae

Libidoclaea granaria.
Leurocyclus tuberculosus.
Chionoecetes opilio.
?*Hyas araneus* (noted in the Pacific by Birula only).
Hyas coarctatus alutaceus.
Notolopas lamellatus.
Libinia emarginata.
Libinia spinosa.
Libinia rostrata.

Subfamily Majinae

Microphrys weddelli.

Family HYMENOSOMIDAE

Halicarcinus planatus.

SYSTEMATIC DISCUSSION

Order DECAPODA

Suborder REPTANTIA

TRIBE BRACHYURA

SUBTRIBE BRACHYGNATHA

Superfamily OXYRHYNCHA

KEY TO THE SUBTRIBES OF THE TRIBE BRACHYURA [1]

A¹. Mouth field (endostome) prolonged forward to form a gutter. Last pair of legs normal or abnormal. Female openings generally sternal. First abdominal limbs of female wanting. Gills few----Subtribe **Oxystomata.**

A². Mouth field roughly square.

B¹. Last pair of legs abnormal, dorsal. Female openings coxal. First abdominal limbs of female present. Gills usually many----Subtribe **Dromiacea.**

B². Last pair of legs normal, rarely reduced, not dorsal, except in *Cymopolia* and *Retropluma*. Female openings sternal. First abdominal limbs of female wanting. Gills few -----------Subtribe **BRACHYGNATHA**, p. 9.

KEY TO THE SUPERFAMILIES OF THE SUBTRIBE BRACHYGNATHA.

A¹. Fore part of body narrow, usually forming a distinct rostrum. Body more or less triangular. Orbits generally incomplete.
Superfamily **OXYRHYNCHA**, p. 10.

A². Fore part of body broad. Rostrum usually reduced or wanting. Body oval, round, or square. Orbits nearly always well enclosed.
Superfamily **Brachyrhyncha.**

KEY TO THE FAMILIES OF THE SUPERFAMILY OXYRHYNCHA

A¹. Carapace not thin and flat. Chelipeds either mobile or powerful, with bent fingers. Male opening coxal.

B¹. Chelipeds especially mobile, rarely much greater than the other legs, or with fingers bent at an angle with the hand. Second article of antenna well developed, generally fused with epistome and often with front. Orbits generally more or less incomplete. Hooked hairs almost always present------------------------------------ Family **MAJIDAE**, p. 10.

B². Chelipeds not specially mobile, usually much longer and heavier than the other legs, and with fingers bent on the hand at an angle toward the side on which the fixed finger is set. Second article of antennae small, short, and not fused with epistome or front. Orbits well made. Hooked hairs almost always wanting------- Family **PARTHENOPIDAE**, p. 510.

A². Carapace thin and flat. Chelipeds not long or specially mobile or with fingers bent at an angle with the hand. Male opening sternal. [No orbits. Second article of antennal stalk slender, fused with epistome but not with front. No hooked hairs]----Family **HYMENOSOMIDAE**, p. 561.

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[1] The keys to the subfamilies and higher groups are taken mostly from Borradaile's work above cited. Those names in the right-hand margin which are printed in capitals indicate the subfamilies and higher divisions treated of in this volume.

KEY TO THE SUBFAMILIES OF THE FAMILY MAJIDAE

A¹. Basal article of antennae extremely slender and usually long. Eyes without orbits. Eyestalks generally long, either non-retractile, or retractile against the sides of the carapace, or against an acute postocular spine that affords no concealment-------------------------- Subfamily **INACHINAE**, p. 11.

A². Basal article of antennae not extremely slender. Eyes either with orbits, or if without true orbits, the eyestalks are more or less concealed by a preocular or postocular process, or are short and sunk in the sides of the rostrum.

  B¹. Basal article of antennae of moderate width, often broader at base than at extremity. Orbits incomplete, never entirely concealing the cornea.

    C¹. Eyes without true orbits. Eyestalks little movable, short, and either concealed by a supraocular spine, or sunk in the sides of the rostrum. Basal article of antennae truncate-triangular. Subfamily **ACANTHONYCHINAE**, p. 140.

    C². Eyes with orbits, having a large, cupped postocular process into which the eye is retractile. Basal article of antennae usually not truncate-triangular-------------------------- Subfamily **PISINAE**, p. 193.

  B². Basal article of antennae very broad. Orbits either complete or incomplete, but always complete enough to conceal the retracted cornea from dorsal view. Eyestalks usually long------- Subfamily **MAJINAE**, p. 335

KEY TO THE SUBFAMILIES OF THE FAMILY PARTHENOPIDAE

A¹. Carapace usually triangular, sometimes suboval or subpentagonal. Rostrum simple. Chelipeds much larger than other legs. Branchial regions deeply separated from cardiac----- Subfamily **PARTHENOPINAE**, p. 510.

A². Carapace usually sharply pentagonal. Rostrum cleft in two. Chelipeds of moderate size. Branchial regions not deeply separated from cardiac. Subfamily **Eumedoninae**.

Superfamily OXYRHYNCHA[11]

Carapace more or less narrowed in front, and usually produced to form a rostrum; branchial regions considerably developed, hepatic regions small. Epistome usually large; buccal cavity quadrate, with the anterior margin usually straight. Branchiae almost always nine in number on either side; their efferent channels open at the sides of the endostome or palate. Antennules longitudinally folded.

Family MAJIDAE (=INACHIDAE[12])

Macropodiens and *Maiens* MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 272.

Maiinea and *Oncininea* DANA, U. S. Expl. Exped., vol. 13, Crust., 1852, pp. 76 and 77.

Maiinea MIERS, Journ. Linn. Soc., London, Zool., vol. 14, 1879, p. 640.

Maiidae ALCOCK, Journ. Asiat. Soc. Bengal, vol. 64, 1895, p. 160.—BORRADAILE, Ann. Mag. Nat. Hist., ser. 7, vol. 19, 1907, p. 480.

Inachidae RATHBUN, Occas. Papers Boston Soc. Nat. Hist., vol. 7, 1905, p. 11.

Chelipeds especially mobile, rarely much greater than the other legs, or with fingers bent at an angle on the hand. Second article of the antenna well developed, generally fused with epistome and often with front. Orbits generally more or less incomplete. Hooked hairs almost always present. Male openings coxal. The palp of the external maxillipeds is articulated either at the summit or at the antero-internal angle of the merus.

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[11] See Rathbun, Bull. No. 97, U. S. Nat. Mus., 1918, p. 14.

[12] *Maja* having been restored to validity in accordance with Opinion 10, International Commission on Zoological Nomenclature, Publ. 1938, Smithsonian Institution, July, 1910, p. 15, it seems best to use also the family name Majidae in place of Inachidae.

Subfamily INACHINAE

Inachinae ALCOCK, Journ. Asiat. Soc. Bengal, vol. 64, 1895, pp. 160, 162, and 168.

Inachidae STEBBING, Ann. Durban Mus., vol. 1, pt. 5, 1917, p. 435.

Eyes without orbits; the eyestalks, which are generally long, are either non-retractile, or are retractile against the sides of the carapace, or against an acute postocular spine that affords no concealment. The basal article of the antennae is extremely slender throughout its extent and is usually long. (Alcock.)

KEY TO THE AMERICAN GENERA OF THE SUBFAMILY INACHINAE

- A¹. External maxillipeds somewhat pediform, with the palp large and coarse, merus often narrower than ischium. Basal article of antennae usually subcylindrical or convex on the ventral surface. Carapace usually elongate, narrowed in front.
  - B¹. Basal antennal article not longitudinally sulcate. Rostrum long, approaching or exceeding in length the postrostral portion of the carapace.
    - C¹. Rostrum a slender spine. Merus of outer maxillipeds with an antero-internal notch.
      - D¹. Rostrum armed with numerous spines on the lateral margins. Ambulatory legs armed with numerous spines. Carapace smooth. **Stenorynchus**, p. 13.
      - D². Rostrum armed with a few spines irregularly placed. Ambulatory legs with few spines, including a very long spine at end of merus. Carapace lumpy---------------------------**Metoporhaphis**, p. 19.
    - C². Rostrum more or less deeply divided into two long slender horns. Merus of outer maxillipeds lacking an antero-internal notch. Ambulatory legs of last two pairs prehensile---------------**Anomalothir**, p. 23.
  - B². Basal antennal article longitudinally sulcate. Rostrum short.
    - C¹. Merus of outer maxillipeds narrow, suboval, the palp articulating at the summit. Carapace ovate, not much longer than broad, spinous. Rostrum bispinous or bidentate-----------------**Achaeopsis**, p. 27.
    - C². Merus of outer maxillipeds subtriangular, notched anteriorly. Carapace elongate, subtriangular, not spinous. Rostrum variable, usually a simple lobe or spine. Ambulatory legs more or less prehensile. **Podochela**, p. 31.
- A². External maxillipeds with the merus as broad as the ischium and the palp of moderate size. Basal article of antennae flattened or concave ventrally. Carapace usually subtriangular. A postocular spine present.
  - B¹. Eyestalks long and slender, when extended reaching forward beyond rostrum. Rostrum bilobed. Basal antennal article little longer than broad--- **Eucinetops**, p. 84.
  - B². Eyestalks stout or if slender, not reaching forward beyond rostrum. Basal antennal article narrower, considerably longer than broad.

C¹. Postorbital tooth large, close to the orbit and curving about the extremity of the eye, so that its outer margin is subparallel to the median line.

D¹. Carapace broadly ovate, with very short rostrum. Chelipeds not longer than carapace. Second and third pairs of legs longest. **Dasygyius**, p. 137.

D². Carapace triangular-ovate, with long, pointed rostrum. Chelipeds longer than carapace. Ambulatory legs diminishing successively in length from first to fourth pair ---------- **Pyromaia**, p. 127.

C². Postorbital tooth either small, or, if large, not curving around end of eye.

D¹. Rostrum longer than its basal width or, exceptionally, just as long.

E¹. Rostrum divided into two narrow spines.

F¹. Ambulatory legs of moderate length, not prehensile. **Oregonia**, p. 70.

F². Ambulatory legs long, prehensile, the propodites more or less dilated and compressed ---------- **Eurypodius**, p. 80.

E². Rostrum simple, spiniform, or terminating in a spine.

F¹. Sexes differing markedly in shape of carapace, postorbital spine and cheliped. Chelipeds of male extremely long, several times as long as postrostral portion of carapace. **Erileptus**, p. 68.

F². Sexes differing only in the usual way. Chelipeds of male not noticeably long.

G¹. Legs subprehensile, the propodites more or less enlarged distally, the dactyli curved. Carapace sparingly granulate or smooth except for a few tubercles ---------- **Inachoides**, p. 59.

G². Legs not subprehensile, the last two articles slender. Carapace very rough between the spines and tubercles. **Anasimus**, p. 64.

D². Rostrum shorter, or no longer, than its basal width.

E¹. Eyestalks slender, extending laterally beyond the oblong, postorbital lobes. Ambulatory legs long, filiform. Three erect, median, dorsal spines ---------- **Arachnopsis**, p. 89.

E². Eyestalks not slender.

F¹. Seven long, capitate, dorsal spines. Anterior margin of hepatic region oblique to median line. Basal antennal article and male sternum sharply cristate ---------- **Aepinus**, p. 92.

F². Dorsal surface when spinous, not furnished with seven long capitate spines.

G¹. Carapace depressed, the branchial regions considerably flattened posteriorly and laterally, so that their lateral margins are visible from above for nearly their whole length.

H¹. First and second ambulatory legs of about equal length and longer than third and fourth legs. Postocular process usually large. Hepatic region with outer margin convex ---------- **Collodes**, p. 105.

H². First ambulatory leg much longer than the other legs in male; legs all short in female. Postocular process typically small. Hepatic region with angular outline, its anterior margin at right angles to median line and approximating the postorbital process ---- **Batrachonotus**, p. 122.

G². Carapace higher and more convex, the branchial regions not remarkably flattened, their lateral margins for the most part invisible in dorsal view. Ambulatory legs of first pair much the longest. Rostrum bilobed. **Euprognatha**, p. 95.

Genus STENORYNCHUS Lamarck

Leptopodia Leach, Zool. Misc., vol. 2, 1815, p. 15; type, *L. sagittaria* (Leach, 1814)=*S. seticornis* (Herbst, 1788). Not *Leptopodia* Leach, Edin. Encyc., vol. 7, 1814, p. 431, which is a synonym of *Macropodia* Leach, 1814.

Stenorynchus Lamarck, Hist. Nat. Anim. sans Vert., vol. 5, 1818, p. 236 (part); not *Stenorhynchus* Latreille, 1825, nor *Stenorynchus* Milne Edwards, 1834.—Rathbun, Proc. Biol. Soc. Washington, vol. 11, 1897, p. 158; type specified, *S. seticornis* (Herbst, 1788).

Carapace triangular, longer than broad, smooth. Rostrum very slender, flattened, longer than the carapace, its lateral margins spinuliferous. Orbits not defined; postorbital spine small. Eyes short, not retractile. Basal article of antenna very slender; flagellum concealed beneath the rostrum. Epistome very large. Ischium of external maxillipeds produced at its antero-internal angle; merus somewhat obcordate, bearing the next article at its external angle. Abdomen in male six-segmented, in female five-segmented. Chelipeds long and slender, with merus, carpus, and palm subcylindrical; fingers much shorter than palm, inner margins dentate. Ambulatory legs extremely long and slender, especially the dactyli. All the legs spinuliferous.

Inhabits both coasts of middle America; also the islands of the eastern Atlantic, and the Atlantic coast of northwest Africa.

Analogous species on opposite sides of the continent: *seticornis* (Atlantic); *debilis* (Pacific).

KEY TO THE SPECIES OF THE GENUS STENORYNCHUS

A^1. No spine at end of basal article of antenna. Rostrum very long, up to two and a half times as long as remainder of carapace______**seticornis**, p. 13.

A^2. A small spine at end of basal article of antenna. Rostrum usually about as long as remainder of carapace, in the old longer____________**debilis**, p. 18.

STENORYNCHUS SETICORNIS (Herbst) [13]

ARROW-CRAB; ARAÑA DEL MAR

Plates 2 and 3

Oost-Indische Zee-Krabbe Slabber, Natuurkundige Verlustigingen, Haarlem, 1778, p. 162, pl. 18, fig. 2.

Araña Parra, Descripcion de diferentes piezas de historia natural, 1787, p. 162, pl. 56, fig. 3.

Cancer seticornis Herbst, Natur. Krabben u. Krebse, vol. 1, 1788, p. 229, pl. 16, fig. 91 (after Slabber); vol. 3, part 3, 1803, p. 27, pl. 55, fig. 2 (Guadeloupe).—Olivier, Encyc. Méth., Hist. Nat., Entom., vol. 6, 1791, p. 178.

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[13] The crab *Cancer seticornis* was described by Herbst, 1788, after Slabber, who stated that it came from the East Indies. It has, however, never been found in that region. It is obviously congeneric with *Stenorynchus sagittarius* (Fabricius). There are only two species in this genus of arrow-crabs. The length of the chelae in Slabber's figure prevents its union with *S. debilis;* therefore, it is here combined with the other existing form, *sagittarius*, which is widely distributed in the Atlantic Ocean. This is in line with the procedure of Herbst, who, in 1803, united the West Indian form (he had then a specimen from Guadeloupe) with that of Slabber.

Cancer sagittarius Fabricius, Entom. Syst. emend. et auct., vol. 2, 1793, p. 442 (part), (type-locality, Guadeloupe; types (probably) in Copenhagen Mus., labeled "*Cancer sagittarius,*" and in Kiel Mus., labeled "*Inachus sagittarius*").

Inachus sagittarius Fabricius, Suppl. Ent. Sys., 1798, p. 359.

Cancer sagittatus Turton, Linn. Syst. Nat., vol. 3, 1800, p. 738.

Maja sagittaris Bosc, Hist. Nat. Crust., vol. 1, 1802, p. 253.

Maja seticornis Bosc, Hist. Nat. Crust., vol. 1, 1802, p. 255, pl. 7, fig. 2 (after Slabber); Mediterranean.

Macropus seticornis Latreille, Hist. Nat. Crust., vol. 6, 1803, p. 111, pl. 49, fig. 3 (after Slabber).

Macropus sagittarius Latreille, Hist. Nat. Crust., vol. 6, 1803, p. 112.

Maja sagittaria Latreille, Gen. Crust., vol. 1, 1806, p. 38.

Maia sagittaria Leach, Edin. Encyc., vol. 7, 1814, p. 395.

Leptopodia sagittaria Leach, Zool. Misc., vol. 2, 1815, p. 16, pl. 67.—Milne Edwards, Cuvier's Règne Anim., Disciples' ed., Crust., pl. 36.—Brullé, in Webb and Berthelot's Hist. Nat. Iles Canaries, vol. 2, Entom., 1840, p. 15.—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 172; Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 6.—Kingsley, Proc. Acad. Nat. Sci. Philadelphia, 1879 (1880), p. 383; not *L. debilis.*—Smith, Rept. U. S. Fish Commr. for 1885 (1886), p. 620.—Aurivillius, K. Svenska Vet.-Akad. Handl., vol. 23, 1889, p. 32, pl. 4, fig. 6.—Osorio, Jorn. Sci. Math., Phys. e Nat., ser. 2, vol. 5, 1898, pp. 185, 187 and 192 (Ilha de S. Thomé).—Gundlach and Torralbas, An. Acad. Habana, vol. 36, 1899 (1900), p. 298; reprint, 1917, p. 9.—A. Milne Edwards and Bouvier, Expéd. Sci. *Travailleur et Talisman,* Crust. Déc., pt. 1, 1900, p. 153.

Macropodia sagittaria Latreille, Nouv. Dict. Hist. Nat., vol. 18, 1817, p. 355.—Gundlach and Torralbas, An. Acad. Habana, vol. 36, 1899 (1900), text-fig. on p. 297; reprint, 1917, pl. 1, fig. 1.

Maia seticornis Latreille, Tableau Encyc. Méth., part 24, 1818, pl. 281 fig. 5 (after Slabber).

Stenorynchus seticornis Lamarck, Hist. Nat. Anim. sans Vert., vol. 5, 1818, p. 237; ed. 2, vol. 5, 1838, p. 424.

Leptopodia ornata Guilding, Trans. Linn. Soc. London, vol. 14, 1825(?), p. 335 (type-locality, St. Vincent; type not in Brit. Mus.; perhaps not extant).

Stenorhynchus seticornis Lamarck, Hist. Nat. Anim. sans Vert., ed. 3, vol. 2, 1839, p. 411.

Leptopodia canariensis Brullé, in Webb and Berthelot's Hist. Nat. Iles Canaries, vol. 2, Entom., 1840, p. 15 (type-locality, Canary Islands; type not in Paris Mus.).

Leptopodia lanceolata Brullé, in Webb and Berthelot's Hist. Nat. Iles Canaries, vol. 2, Entom., 1840, plate "Crustacées," figs. 1–1*b*.

Leptopodia sagittarius Herklots, Symbolae Carcinologicae, Leyde, 1861, p. 23 (Sénégal).

Leptopodia vittata Guérin, in Kingsley, Proc. Acad. Nat. Sci. Philadelphia, 1879 (1880), p. 384, (type-locality, Senegal; type in Mus. Phila. Acad.).

Leptopodia lineata Göldi, Arch. f. Naturg., vol. 52, pt. 1, 1886, p. 37, pl. 3, figs. 24–31 (type-localities, Rio de Janeiro and Cape Frio, Brazil).

Stenorynchus sagittarius Rathbun, Ann. Inst. Jamaica, vol. 1, 1897, p. 4; Proc. U. S. Nat. Mus., vol. 22, 1900, p. 293; Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 ,1901, p. 53.—Hay and Shore, Bull. Bur. Fisheries, vol. 35, 1915–16 (1918), p. 455, pl. 37, fig. 8.

Stenorhynchus sagittarius Verrill, Trans. Conn. Acad. Sci., vol. 10, 1900, p. 577 (Bermuda); vol. 13, 1908, p. 397.

Diagnosis.—No spine at extremity of basal antennal article. Carapace nearly naked. Rostrum usually much longer than carapace; palm much longer than fingers.

Description.—Carapace naked or nearly so; in the old the rostrum, chelipeds and legs are pubescent. Rostrum horizontal, tapering very gradually to an acuminate tip, length varying from about one and a half to two and a half times as long as carapace, occasionally less than one and a half times; lateral spinules directed obliquely forward; margins also setiferous. A strong spine at middle of basal antennal article, directed downward and forward; no spine at anterior end. Chelipeds and legs finely spinulous and armed besides with two rows of spines on the merus, two or three spines on the carpus, besides several terminal spines on both articles. In old specimens the distal end of palm and basal half of fingers are shaggy-hairy. Palm of male cheliped from two and one-half to four times as long as fingers. Ambulatory legs of first pair from eight to nine times the length of the postrostral portion of carapace.

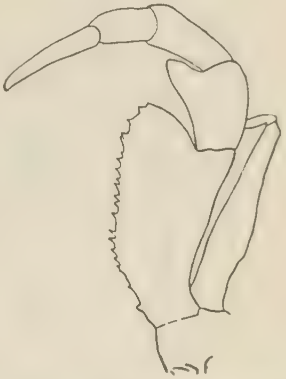
FIG. 3.—STENORYNCHUS SETICORNIS (9467), MAXILLIPED, × 7

Color.—Creamy white or buff, with bands of brown or black diverging from the median line to the posterior margin; fingers blue; spines of rostrum, legs, and teeth of chelae orange or red. (Hay.)

"Light buff; chestnut and white lines; legs reddish with bright red spots at joints. Claws bright purple." (Bartsch.)

"Light orange vermilion; ends of claws mauve; eyes maroon." (Bartsch.)

Variation.—Although there is a great range of variation in this species, as to length of rostrum, relative length of palm and fingers, and length of legs, there is only one specimen (9862) which leans toward *L. debilis;* the rostrum is very little longer than the rest of the carapace and inclines slightly upward from base to tip, and the palm is one and a half times as long as the dactylus.

Measurements.—Male (43066), length of carapace with rostrum 57.3, length of rostrum 41, width of carapace 13, length of palm 36.2, of movable finger 11.6 mm. Male (32515), length of carapace with rostrum, tip lacking, 63, length of rostrum 37.3, width of carapace 22, length of palm 43, of second leg 225 mm.

Range.—From Cape Hatteras, North Carolina, to Rio de Janeiro, Brazil; Bermudas; Madeira; Canaries; Cape Verde Islands; Senegal; St. Thomas Island in Gulf of Guinea, off French Congo. "Mediterranean" (Bosc, Latreille, Lamarck) needs confirmation. Depth, 2 to 814 fathoms, but usually moderate.

Material examined.—See table, pages 16–18.

Material examined of Stenorynchus seticornis

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
North Carolina:	° ′ ″	° ′ ″			°F						
Off Cape Hatteras	35 21 00	75 21 30	16	gy. S. brk. Sh.		Oct. 19, 1884	2280	*Albatross*	1♂	14297	
Do	35 08 30	75 10 00	49	gy. S.		Oct. 17, 1885	2596	do	1♂ 2♀	17373	
Between Capes Hatteras and Lookout.	34 37 30	75 39 45	34	yl. S. brk. Sh.		Oct. 18, 1885	2604	do	1♂	11219	
Fishing grounds off Beaufort.			15				8211	*Fish Hawk*	1♂	51077	
Gulf Stream 30 m. south of Lookout Lightship.			(1)			July 28, 1915		do	1♂	50499	
Off Cape Fear	33 42 45	77 31 00	17	S. P.		Oct. 20, 1885	2616	*Albatross*	1♂	17526	
Do	33 37 30	77 36 30	14	crs. yl. S. brk. Sh.		do	2617	do	1♀	11227	
Do	33 34 00	77 42 00	9	gy. S. brk. Co.		do	2621	do	1♂ 1♀	11232	
Do	33 18 30	77 07 00	95	fne. gy. S.	65.8	Apr. 2, 1885	2417	do	1♂	9862	Variety, towards *debilis*.
Off South Carolina	32 55 00	77 54 00	79	crs. S. bk. Sp.	59.1	Jan. 5, 1885	2311	do	1 y	17524	
Bahamas: Golding Cay						June 26, 1903		B. A. Bean	1♂	31040	From Geographic Soc., Baltimore.
Florida:											
Off Miami			10–40					J. B. Henderson	1♂	49083	
Do			30			May 12, 1912		P. Bartsch	1	45571	
Off Biscayne Key			2.7–5.7			May 29, 1912		do	2♂	45614	
Straits of Florida	25 05 00	80 15 00	56	Co. S.		Apr. 9, 1886	2640	*Albatross*	1♀	11379	
Off Key West	24 25 45	81 46 00	45	Co.		Jan. 15, 1885	2318	do	7♂ 14♀	9475	
Do	24 25 45	81 46 45	45	Co.		do	2317	do	20♂ 10♀	9467	
Do	24 25 30	81 47 45	50		74	do	2316	do	1♂ 1♀	9464	
Do	24 26 00	81 48 15	37	Co.		do	2315	do	7	9459	
Pourtales Plateau, 10 m. south of Key West.			125	Co.					1♀ y	49082	
Sand Key Reef, off Key West.								J. B. Henderson	2♀ y	45513	
Tortugas						1893		Biol. Exped. State Univ. Iowa.		Mus. S. U. I.	
West coast of Florida	25 23 30	83 17 00	33.5	Sponge, Co.	68.5	Feb. 28, 1889	5072	*Grampus*	1♂	15187	
Do	25 34 00	83 28 00	39	G. Co. fne. Sh.	69	Mar. 1, 1889	5076	do	1♂	20108	
Do	25 44 32	83 21 15	34	fne. S.	69	Mar. 11, 1889	5088	do	1♂	15188	
Do	26 04 00	82 49 00	21.5	S. brk. Sh.	66	Mar. 17, 1889	5099	do	1♂	15189	
Do	26 00 00	82 57 30	24	fne. S. bk. Sp. brk. Sh.		Mar. 19, 1885	2413	*Albatross*	3♂ 3♀ 1 y	11303	

Off Charlotte Harbor	26 33 00	83 10 00	28	sdy	66	Apr. 2, 1901	7123	*Fish Hawk*	2♂ 2♀	25585
Do	26 33	83 15 30	27	fne. wh. S. bk. Sp.		Mar. 18, 1885	2411	*Albatross*	1♂	17404
					°*C*					
Highland section	27 55 30	83 11 30	13	Co. R.	15.2	Jan. 28, 1902	7253	*Fish Hawk*	1♂ 1♀ ovig	46701
Anclote section	28 01 30	83 08 00	11	rky	13.5	Jan. 23, 1902	7234	do	1♂ 4♀ (3 ovig.)	46700
Do	Anclote Lt., E. ⅞ N., 21.5 m.		12.5	R. Co. S	17.2	Mar. 28, 1901	7106	do	1♂	25584
West coast of Florida	28 45 00	85 02 00	30	gy. S. brk. Co.		Mar. 15, 1885	2405	*Albatross*	7 y	17403
Do	28 46 00	84 49 00	26	crs. S. Co		do	2406	do	2♂ 1♀	17375
North Key section	28 52 45	83 07 00	5.75	rky	16.1	Dec. 9, 1901	7209	*Fish Hawk*	1♀	46699
Pepperfish Key section	29 21 00	83 32 00	6.75	rky	16.7	Nov. 21, 1901	7160	do	1♀ y	46742
Aucilla section	29 52 10	83 51 47	3	S. Co	20	Nov. 6, 1901	7147	do	1♀	46696
Do	29 45 48	83 57 30	7	S. Co	21	do	7149	do	1♀ ovig	46697
Do	29 49 00	84 06 15	6	R. Co	15	Dec. 5, 1901	7192	do	1♂	46698
Do	29 34 00	84 07 20	10.5	R. Co	17.6	do	7195	do	1♂	46788
					°*F*					
Off Carrabelle	Carrabelle Lt., NW., 14⅔ m.		10		60.2	Jan. 16, 1913	21	do	3♂ 2♀ ovig	50980
South of Cape San Blas	29 11 30	85 29 00	26	S. G. brk. Sh.		Feb. 7, 1885	2374	*Albatross*	1♀	17525
Do	29 14 00	85 29 15	25	Co		do	2373	do	1♂ 1♀	14976
Do	29 15 30	85 29 30	27	G		do	2372	do	1♂ 4♀	9613
Do	29 18 15	85 32 00	25	crs. gy. S. brk. Sh.		do	2370	do	3♂	9602
Alabama:										
South of Mobile Bay	29 27 30	87 48 30	30	crs. S. bk. Sp. Sh.		Mar. 4, 1885	2390	do	1 y	17402
Do	29 24 00	88 04 00	32	S. G. brk. Sh.		do	2387	do	1♂	9689
Yucatan Channel:										
Northwest of Cape Catoche.	22 18 00	87 04 00	24	wh. R. Co		Jan. 30, 1885	2365	do	2♂ 1♀ 2 y	17374
Do	22 08 30	86 53 30	25	Co. S.		do	2362	do	1♂	17401
Do	22 07 30	87 06 00	21	wh. R. Co		do	2363	do	1 y	17405
Off Arrowsmith Bank, Yucatan.	20 59 30	86 23 45	130	Co		Jan. 22, 1885	2354	do	1♂	14975
Cuba: Bahia Honda							15	Henderson and Bartsch, *Tomas Barrera*.	2♂ 1 y	48675
Jamaica:										
Montego Bay				on piles of wharves.		July, 1910		E. A. Andrews	2♂ 1♀ 2 y	43062 to 43065
Do				do		July - Aug. 1910.		C. B. Wilson	1♂ 2♀	43060, 43061
Kingston Harbor						May - July, 1896.		F. S. Conant	1♂	19580
Porto Rico:										
San Antonio Bridge, San Juan.						Jan. 12, 1899		*Fish Hawk*	1♂	21417
Mayaguez Harbor	Pt. del Algarrobo, E., 2¾ m.		75-76	rky. S. Co	68.5	Jan. 20, 1899	6063	do	1♂	21418
					°*C*					
Off Vieques Island	Pt. Mula Lighthouse, E. ½ N., 11¼ m.		6	Co	27.3	Feb. 14, 1899	6096	do	1♀	21419

[1] From trawl.

Material examined of Stenorynchus seticornis—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″									
St. Thomas						Jan. 17-24, 1884.		*Albatross*	1♂	7653	
St. Martin: Simson's Bay, lagoon.			([2])	rky		Sept. 7, 1905		J. Boeke	1♂	Leiden Mus.	
Dominica: Roseau			15-150					A. H. Verrill	1♂	32515	
Curaçao:											
Rifwater (lagoon)			([2])			June 18, 1905		J. Boeke	1♀ 1♀	42955 Leiden Mus.	
Piescaderos Bay			([2])	sdy		June 21, 1905		do	1♂ 1♀	do	
Colombia:											
Santa Marta			2					C. F. Baker	1♂	22551	
Near Morrosquillo	9 30 15	76 20 30	42	gn. M. S		Mar. 23, 1884	2142	*Albatross*	4♂ 3♀	6934	
Brazil:											
Maranhão			2	pebbly		1870		Derby and Wilmot, Hartt Explor.			
Mar Grande, Bay of Bahia.						1876-77		R. Rathbun, Hartt Explor.	1♀	19940	
Periperi, Bay of Bahia						do		do			
Bay of Rio de Janeiro			([2])			do		do	1♀	19941	

[2] Shallow water.

STENORYNCHUS DEBILIS (Smith)

Plates 4 and 5

Leptopodia sagittaria Milne Edwards and Lucas, d'Orbigny's Voy. l'Amér. Mérid., vol. 6, pt. 1, 1843, p. 3; atlas, vol. 9, 1847, Crust., pl. 4, figs. 3–3*c*; Valparaiso; not *L. sagittaria* Leach.—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 172 (part).—Miers, *Challenger* Rept., vol. 17, 1886, p. 4 (part).

Leptopodia debilis Smith, Rept. Peabody Acad. Sci. for 1869 and 1870, appendix, 1871, p. 87 (type-locality, Bay of Realejo, Nicaragua; type, Cat. No. 3948, M. C. Z.).—Rathbun, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 44.—Faxon, Mem. Mus. Comp. Zoöl., vol. 18, 1895, p. 5.

Leptopodia modesta A. Milne Edwards, Crust. Rég. Mex., 1878, p. 173; as variety of *L. sagittaria* (type-locality, Chile; type in Paris Mus.).

Stenorynchus debilis Rathbun, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 568; vol. 38, 1910, p. 570; Proc. Washington Acad. Sci., vol. 4, 1902, p. 283.

Diagnosis.—A small spine at extremity of basal antennal article. Carapace pubescent.

Rostrum usually about same length as carapace; palm shorter and fingers longer than in *seticornis;* palm usually twice the length of dactylus.

Description.—Carapace covered with a short pubescence; chelipeds and legs pubescent in small as well as large specimens. Carapace somewhat wider across branchial regions than in *seticornis.* Rostrum slightly ascending, length in small and medium-sized specimens about equal to, or less than, that of the postrostral portion of the carapace, in larger specimens attaining to one and a half or even twice the length of carapace. A small spine directed forward at anterior end of basal article of antenna, at the inner angle; this spine is larger and sharper in males than in females. The fingers and palm never get so shaggy-hairy as in *seticornis.* Palm of male cheliped stouter than in *seticornis,* usually about twice as long as dactylus but varying from one and a half to two and a half times, in the largest specimen. The ambulatory legs of the first pair vary from six to seven and a half times the carapace length.

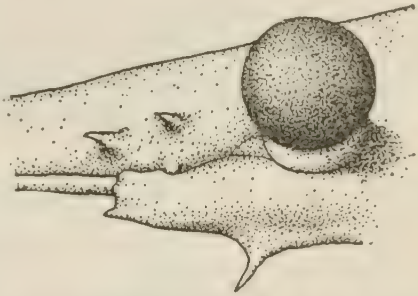

FIG. 4.—STENORYNCHUS DEBILIS, MALE (15544) PROFILE OF ORBITAL REGION SHOWING BASAL ANTENNAL ARTICLE AND ITS SMALL TERMINAL SPINE, × 10

Color.—Bright green; lateral portions of carapace and also the feet covered with soft gray down. Fingers reddish. (Milne Edwards and Lucas.)

Measurements.—Male (15544), length of carapace with rostrum 34.6, length of rostrum 20.6, width of carapace 12.6, length of palm 15.5, of movable finger 9.8 mm.

Range.—Magdalena Bay, Lower California, Mexico; Gulf of California; Nicaragua; Panama; Galapagos Islands; Chile (Milne Edwards and Lucas). Low-water mark to 31 fathoms.

Remarks.—This species has at times been united with *seticornis,* but the anterior spine of the basal antennal article separates it specifically.

Material examined.—See table, page 20.

Genus METOPORHAPHIS Stimpson

Metoporhaphis STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 198 [70]; type, *M. calcarata* (Say).—A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 174.

Metoporaphis MIERS, Journ. Linn. Soc. London, vol. 14, 1876, p. 643; *Challenger* Rept., vol. 17, 1886, p. 4.

Carapace triangular, longer than broad, uneven. Rostrum long, very slender, subcylindrical, tapering to a sharp point. Eyes protuberant, peduncles terminating above in a spinule which projects

Material examined of Stenorynchus debilis

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°*F*						
Mexico:											
Gulf of California	31 22 00	114 07 45	17	G. brk. Sh	65.2	Mar. 25, 1889	3026	*Albatross*	9♂ 6♀	15544	
Do	Patos Island, anchorage		4.5			Apr. 23, 1921		Fred Baker	2♀ (1 ovigerous)	Cal.Acad.Sci.	
Do	28 28 00	112 04 30	29	gy. S	62.9	Mar. 23, 1889	3014	*Albatross*	1♂ 1♀	18067	
Do	25 02 45	110 43 30	21	S. Sh. Coralline.		Mar. 17, 1889	3005	do	1♂ 1♀	16024	
Do	25 02 15	110 43 30	17	S. Sh		do	3002	do	1♀	17322	
Do	24 22 30	110 19 30	8	brk. Sh		Apr. 30, 1888	2824	do	1♀	21854	
Do	24 22 15	110 19 15	7	brk. Co		do	2825	do	1♂	21855	
Do	24 18 00	110 22 00	26.5	brk. Sh		do	2823	do	1♂	21853	
Do	24 12 00	109 55 00	9.5	Sh		do	2826	do	1♂	21856	
Do	24 11 30	109 55 00	10	Sh		do	2828	do	1♀	21857	
Magdalena Bay, Lower California.	24 35 30	112 05 00	27	fne. gy. S	64.5	Apr. 9, 1889	3041	do	1 y	17323	
Do	21 32 00	111 59 00	12	fne. gy. S		May 2, 1888	2831	do	1♂	21859	
Do						1917		C. R. Orcutt	1♂	50643	
Off Cape St. Lucas, Lower California.	22 52 00	109 55 00	31	rky	74.1	May 1, 1888	2829	*Albatross*	2♂	21858	
Nicaragua: Polvon, Bay of Realejo.								J. A. McNiel	1♂	3948, M.C.Z.	Holotype.
Panama:											
Panama						Mar. 12, 1891		*Albatross*	1♂ 1♀	20597	
Bay of Panama	8 44 00	79 09 00	29.5	gn. M		Mar. 6, 1888	2799	do	1♀	21852	
Do	8 10 30	78 50 30	18	gy. S. brk. Sh		Mar. 5, 1888	2798	do	3♂	21851	
Pearl Islands, Bay of Panama.						Apr. —, 1875		S. Garman	3♀	1829, M.C.Z.	
Galapagos Islands:											
Tagus Cove, Albemarle Island.			12			1898–99		Hopkins Stanford Galapagos Expedition.	2♂	25675	
Tagus Cove, on reef north of Tagus Hill.						1898–99		do	1♂ 1y. ♀	Stanford University.	

beyond the cornea. A postorbital tubercle present. Basal article of antenna slender; movable portion elongate, visible from above on either side of rostrum. Epistome large. Maxillipeds similar to those of *Stenorynchus*. Abdomen of male with the last two segments not completely coalesced; last three segments of female coalesced. Chelipeds of moderate length, stout in male. Fingers as long as palm and slightly gaping in male, shorter than palm and widely gaping in female. Ambulatory legs extremely long and slender, the middle of the three distal spines of the merus much elongated.

Contains only one species.

METOPORHAPHIS CALCARATA (Say)

Plates 6 and 7

Leptopodia calcarata Say, Journ. Acad. Nat. Sci. Philadelphia, vol. 1, pt. 2, 1818, p. 455 (type-locality, Bay of Charleston, South Carolina; type not extant[14]).

Metoporhaphis calcarata Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 198 [70].—Kingsley, Proc. Acad. Nat. Sci. Philadelphia, 1878, p. 316 [1].

Metoporhaphis calcaratus A. Milne Edwards, Crust. Rég. Mex., 1878, p. 174.—Smith, Rept. U. S. Fish Commr. for 1885 (1886), p. 620.—Rathbun, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 45.—Hay and Shore, Bull. Bur. Fisheries, vol. 35, 1915–16 (1918), p. 454, pl. 37, fig. 5.

Metoporhaphis forficulatus A. Milne Edwards, Crust. Rég. Mex., 1878, p. 174; 1879, pl. 31, figs. 3–3*e* (type-locality, Guiana; type in Paris Mus.).

Metoporaphis calcarata Miers, Journ. Linn. Soc. London, vol. 14, 1879, p. 643; *Challenger* Rept., Zool., vol. 17, 1886, p. 4.

Metoporaphis forficulatus Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 5.

Stenorhynchus longirostris? Göldi, Arch. f. Naturg., vol. 52, pt. 1, 1886, p. 41, pl. 3, figs. 32–36; not *S. longirostris* (Fabricius).

Diagnosis.—Carapace uneven, tuberculate. Antennae visible in dorsal view. A long spine at end of merus of ambulatory legs. A spine on eye.

Description.—Surface pubescent; long, marginal hairs on chelipeds. Narrow neck longer in male than in female. Carapace nodulous, each nodule surmounted by a tubercle and this in turn usually with a pencil of soft, hooked hairs. Tubercles as follows: Four gastric, of which three are in a transverse row anteriorly; one large cardiac; one postorbital, remote from orbit and slightly in advance of gastric tubercles; two hepatic, one of which is marginal; three branchial, of which one is marginal and the other two in a nearly longitudinal row; a subbranchial tubercle in advance of marginal tubercle; a tubercle on pterygostomian ridge, visible from above; a granule in front of angle of buccal cavity. The rostrum is armed with four or five slender spines which project outward alternately from opposite sides of lower surface, and are not always apparent in small specimens;

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[14] "All that remains is the stomachal region with eyes and rostrum attached." (Gibbes, 1850.)

Material examined of Metoporhaphis calcarata

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
North Carolina:	° ′ ″	° ′ ″			°C						
Off Cape Hatteras	35 35 20	74 58 45	27	crs. gy. S.		Oct. 20, 1884	2296	*Albatross*	2♂ 2♀	7270	
Do.	35 21 30	75 25 00	11	crs. gy. S.		Oct. 19, 1884	2286	do.	1♀	8845	
Do.	35 21 25	75 24 25	13	crs. gy. S.		do.	2285	do.	1♂ 1♀	7269	
Do.	35 08 30	75 10 00	49	gy. S.		Oct. 17, 1885	2596	do.	1♀	18068	
Gulf Stream	25 m. E. by SE. of Lookout Lightship.					July 28, 1915		*Fish Hawk*	1♂	50522	
Bogue Sound						July 3, 1911		do.	4	51013	
Off Cape Fear	33 37 30	77 36 30	14	crs. yl. S. brk. Sh.		Oct. 20, 1885	2617	*Albatross*	1♂	18069	
Middle Sound, near Wilmington.						Apr. 18, 1880		R. E. Earll	1♂	4384	
Florida:											
Key West						Mar. 27, 1886		*Albatross*	1♂	11385	Caught with electric light.
Marco						Feb. 25, 1889		*Grampus*	1♀	15323	
Do.						1885		H. Hemphill	1♀	18070	
Charlotte Harbor								From Union College.	1♀	42579	
Off Charlotte Harbor	26 35 00	83 11 00	27.5	sdy.	20	Apr. 2, 1901	7122	*Fish Hawk*	1♂	25586	
Off Gasparilla Island	Gasparilla Lt., E. by S., 6½ m.		7			Jan. 4, 1912	13	do.	1♂	50981	
Sarasota Bay								From Union College.	6	42580	
Do.								J. S. Kingsley Collection.	1♀	53075	From Boston Soc. Nat. Hist.
Anclote section	28 19 30	83 01 00	6.25	rky. G.	12.5	Jan. 24, 1902	7239	*Fish Hawk*	1 y.	47066	
Do.	28 19 45	83 06 30	8.5	rky. G.	13	do.	7240	do.	1♀	46737	
St. Martins section	28 26 00	83 02 30	7.5	rky. Co.	13	Jan. 15, 1902	7215	do.	1♀	46969	
Do.	28 27 15	83 19 00	10.5	rky. sdy.	14	do.	7218	do.	1♂	46734	
Do.	28 33 30	83 19 00	9	sdy. grassy	13.6	do.	7219	do.	1♂	46735	
Do.	28 34 30	83 15 45	7.5	sdy. grassy	12	do.	7220	do.	1♀	46736	
North Key section	28 47 55	83 16 30	8	rky. grassy	17	Dec. 9, 1901	7211	do.	1♂	46761	
Do.	28 57 30	82 58 00	3	rky.	15.5	do.	7207	do.	1♂	46760	
Pepperfish Key section	29 21 00	83 32 00	6.75	rky.	16.7	Nov. 21, 1901	7160	do.	1♂	46733	
Do.	29 23 00	83 27 05	3.5	S. G.	16.3	do.	7159	do.	3♂	47103	
Do.	29 29 30	83 33 25	4.75	sdy.	21.5	Nov. 5, 1901	7146	do.	2♂ 3♀	46758	
Do.	29 30 50	83 31 40	3.25	sdy.	22	do.	7145	do.	1♂ y.	46732	
Aucilla section	29 48 10	83 55 15	5	S. Co.	21	Nov. 6, 1901	7148	do.	5♂ 7♀	46759	
Alabama: Off Mobile Bay	29 24 30	88 01 00	35	yl.S.bk.Sp.		Mar. 4, 1885	2388	*Albatross*	1♂	9695	

Louisiana: Gulf of Mexico, near Calcasieu Pass.		(1)		Nov. 21, 1906		M. H. Spaulding.	1♂	38351	Living among hydroids, *Bugula* and algae.
Brazil: Rio de Janeiro								Copenhagen Mus.	

[1] Dredged.

two of these spines are near together close to the extremity and give the rostrum the appearance of being trifid. Basal antennal article with a spine below midway of its length and another at outer distal angle; a spinule at end of next two articles. On sternum in front of male abdomen, two or three spines on each side forming converging lines parallel to terminal segment of abdomen.

Chelipeds twisted, those of male stout; margins of lower (really inner) surface armed with sharp spines; at distal end of inner (or upper) surface of merus, a long spine; a sharp spine near each extremity of upper surface of carpus; hand broad, inflated; fingers about as long as palm, prehensile edges furnished with truncate, denticulate, widely separated teeth except at extremities where they become closely fitting, triangular teeth. Chelipeds of female much feebler, palm shorter, fingers much longer and more gaping, sharp spines on prehensile edges. The merus of the legs has besides the conspicuous armament at the extremity a single short spine situated about midway of its length in the fourth pair but successively more distad in the other pairs. The dactyls are longer than the propodites, are fringed with hair, their extremities are gently curved and drawn out to a very slender tip.

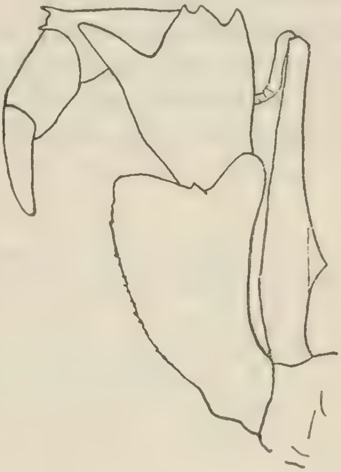

FIG. 5.—METOPORHAPHIS CALCARATA (11385), MAXILLIPED, × 14.5

Color.—A dirty gray (Hay and Shore).

Measurements.—Male (18071), length of carapace 19.5, width 8.2, length of rostrum 11, length of cheliped about 21.5 mm.

Range.—From off Cape Hatteras, North Carolina, to Rio de Janeiro, Brazil. Georgia (Gibbes). Shallow water to 49 fathoms.

Material examined.—See table, pages 22–23.

Genus ANOMALOTHIR Miers

Anomalopus STIMPSON, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 124; type, *A. furcillatus* Stimpson; name preoccupied by Duméril, Cat. Coll. Rept., 1851, p. 185, for a genus of Reptiles.—A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 187.

Anomalothir MIERS, Journ. Linn. Soc. London, vol. 14, 1879, p. 648; substituted for *Anomalopus*.

Carapace much elongated, almost subcylindrical. Rostrum very long, bifurcate; horns contiguous for half their length or more. Eyes without orbits; preorbital spine small, acute; postorbital minute. Antennae exposed in dorsal view, basal article narrow. Antennular fossae large. Epistome more than half as long as broad. Merus of maxillipeds without a notch at the inner angle where the palpus is inserted; outer angle sharply prominent. Chelipeds in adults longer than the carapace; merus subcylindrical; propodus elongate, slightly compressed; fingers of male less gaping than of female. Ambulatory legs of first two pairs long and slender, the first pair much the longer; third and fourth pairs shorter, stouter and prehensile, the third pair the shorter. Abdomen of seven segments in both sexes.

Contains only two species.

KEY TO THE SPECIES OF THE GENUS ANOMALOTHIR

A¹. Three spines on lower border of merus of third leg. Length of palm more than three times its greatest width. Carapace with regularly placed tubercles -- **furcillatus**, p. 24.

A². No spines on lower border of merus of third leg. Length of palm not more than three times its greatest width. Carapace almost smooth -- **frontalis**, p. 25.

ANOMALOTHIR FURCILLATUS (Stimpson)

Plate 8, fig. 2; plate 9, fig. 2; plate 206

Anomalopus furcillatus Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 125 (type-locality, off "The Samboes," 123 fathoms; type not extant).—A. Milne Edwards, Crust. Rég. Mex., 1879, p. 188, pl. 35, figs. 4–4*e;* Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 8.

Anomalothir furcillatus Miers, Journ. Linn. Soc. London, vol. 14, 1879, p. 648.—Rathbun, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 65; Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 254.—A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 368, pl. 10, figs. 6 and 7; pl. 12, fig. 1.

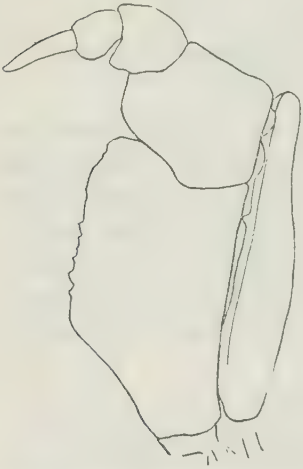

Fig. 6.—Anomalothir furcillatus (18127), maxilliped, × 17

Diagnosis.—Carapace with regularly placed tubercles. Preorbital spine as long as postorbital. Length of propodus of cheliped, measured on its upper margin, more than three times its greatest width. Three spines on lower border of merus of third leg.

Description.—Carapace pubescent; a small median spine above posterior margin; four gastric and two branchial prominences; lateral margin of branchial regions with a row of spinules, continued on the pterygostomian region. Hepatic region with a minute spine. Rostrum long, from two-thirds to one and a fourth times the postfrontal length of the carapace; forked in the terminal half; horns slightly divergent. Antennae shorter than rostrum.

Merus of chelipeds with a row of small spines below and a less distinct row above; carpus with three spines on outer surface; palm unarmed, widening distally; fingers short, stout, slightly gaping in basal half. Fingers more gaping in female than in male, on account of their greater slenderness in the basal portion and the smaller size of the basal tooth on the dactylus in the female.

Ambulatory legs pubescent; merus of third pair with three strong hooked spines beneath; propodus and dactylus strongly curved and of about equal length. Propodus of fourth pair nearly straight, distally thickened; dactylus shorter than propodus and less curved than in third pair. Dactylus of third and fourth pairs spinulous.

Color.—General color, light orange yellow, palms of a much deeper color (Henderson).

Measurements.—

Cat. No.	Sex	Length (entire)	Rostrum	Width	Cheliped	First leg	Second leg	Third leg	Fourth leg
18127	♂	17.4	7.5	6	21.2	51.4	42.6	14	----------
18127	♀	19.6	6.2	5	14	43	33.5	10	20

Range.—From off Cape Lookout, North Carolina, to Gulf of Mexico and Grenada. Depth, 30 to 262 fathoms.

Material examined.—See table, page 26.

ANOMALOTHIR FRONTALIS (A. Milne Edwards)

Plate 8, fig. 1; plate 9, fig. 1; plate 207

Anomalopus frontalis A. Milne Edwards, Crust. Rég. Mex., 1879, p. 189, pl. 36, figs. 1-1*f* (type-localities, off Barbados, 100 fathoms, and off Havana, 175 fathoms; cotype, Barbados, in Paris Mus.; cotype, Havana, in M. C. Z.); Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 8.—A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 368.

Diagnosis.—Carapace almost smooth. Preorbital spine shorter than postorbital. Length of propodus of cheliped, measured on its upper margin, not more than three times its greatest width. No spines on lower border of merus of third leg.

Description.—Differs from *A. furcillatus* in the carapace broader behind and less cylindrical, and in the more deflexed rostrum, the horns of which are contiguous to near the extremity. A preorbital spine is present though smaller than in *furcillatus;* the antennal spine also is shorter than in that species.

Material examined of Anomalothir furcillatus

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°F						
North Carolina: East of Cape Lookout.	34 39 15	75 33 30	107	gy. S. P.		Oct. 18, 1885	2601	*Albatross*	1 y.	18128	
Gulf of Mexico:											
Southwest of Cape San Blas, Florida.	28 38 30	85 52 30	142	gn. M. brk. Sh.		Mar. 14, 1885	2401	do.	1♂ 12♀	18127	♂ with Rhizocephalid attached to abdomen.
Southeast of Cape San Blas, Florida.	28 45 00	85 02 00	30	gy. S. brk. Co.		Mar. 15, 1885	2405	do.	1♀ ovig.	47063	
Southwest of Cape San Blas, Florida.	26 31 00	85 53 00	[1] 119			1877–78	50	*Blake*	1	2953, M.C.Z.	
Florida Strait:											
Sambo Key, Florida			135					*Eolis*, J. B. Henderson.	1♂	53592	
Do			110					do.	1♀	51427	
Northwest of Dry Tortugas.	25 33 00	84 21 00	101		61.75	1877–78	45	*Blake*	1	2657, M.C.Z.	
Gulf Stream, off Key West.	24 21 55	81 58 25	98	S.	55	Feb. 14, 1902	7279	*Fish Hawk*	1 ♀ ovig.	47104	
Do	24 17 05	81 58 25	132	S.	52	do.	7280	do.	1♀ ovig.	47064	
Off Sand Key, Florida	Sand Key Light, bearing N., about 8 miles.		(2)			June 20, 1893	34	State Univ. Iowa Exped.	2♂	Mus. S. U. I.	
Off American Shoal	American Shoal Light, bearing N. by W., 10 miles.		(3)			June 27, 1893	51	do.	1♂	do.	
Cuba:											
Off Havana	23 10 39	82 20 21	200	Co.		Jan. 20, 1885	2346	*Albatross*	1♀ y.	15166	
Do						1885	(4)	do.	2♀	15156	
Do			175			1877–78	79	*Blake*	1	2885, M.C.Z.	
Mexico: Northern part of Yucatan Bank.	23 32 00	88 05 00	95			1877–78	32	do.	1	2677, M.C.Z.	
Jamaica: Off entrance to Port Royal.			100			1880		do.	1♀	4471, M.C.Z.	
Lesser Antilles:											
Off Frederickstadt, St. Croix.	17 37 55	64 54 20	117	R. brk. Sh.	65	Jan. 5, 1879	132	do.	1	2884, M.C.Z.	
Off Guadeloupe	15 59 10	61 44 15	196	R.	53.75	Jan. 18, 1879	159	do.	1♀	4472, M.C.Z.	
Off Grenada	11 48 15	61 48 45	262	crs. S.	47	Feb. 27, 1879	249	do.	2	2883, M.C.Z.	

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[1] The depth at this position is really 1,700 fathoms. The latitude should perhaps be 28°.

[2] About 120 fathoms.

[3] About 100 fathoms.

[4] Between 2319 and 2350.

The carpus of the chelipeds has four spines, three small ones in a diagonal row near the inner margin and a larger spine near the anterior outer angle. The manus is less elongate than in *furcillatus* and of more nearly uniform width throughout. Fingers of male more gaping than in male of *furcillatus* and with a large basal tooth.

Ambulatory legs shorter than in *furcillatus*, the last two articles of the third leg less falcate. Fourth leg not much longer than third, but less falcate, as is the case in the related species. No spines on lower surface of merus of third leg. Longer spinules on lower border of last two pairs of dactyls.

Measurements.—Male (15157), length of carapace including rostrum 13, rostrum 6, width of carapace 4.8, length of cheliped 15.4, first leg 28.3, second leg 20.5, third leg 10.5, fourth leg 14.2 mm.

Range.—Off Havana; Montserrat; Guadeloupe; Dominica; Barbados. Depth, 73 to 183 fathoms.

Material examined.—See table, page 28.

Genus ACHAEOPSIS Stimpson

Achaeopsis STIMPSON, Proc. Acad. Nat. Sci. Philadelphia, vol. 9, 1857, p. 219 [25]; type, *A. spinulosus* Stimpson; Smithson. Misc. Coll., vol. 49, 1907, p. 21.

Dorynchus NORMAN, in Wyville-Thomson's Depths of the Sea, 1873, p. 175; type, *D. thomsoni* Norman.—RATHBUN, Proc. Biol. Soc. Washington, vol. 11, 1897, p. 162.

Lispognathus A. MILNE EDWARDS, Crust. Rég. Mex., 1880, p. 349; type, *L. furcillatus* A. Milne Edwards, 1880=*A. thomsoni* (Norman, 1873); Bull. Mus. Comp. Zoöl., vol. 8, Dec. 28, 1880, p. 8.

Carapace ovate-triangular, convex, spinous; interorbital portion narrow; a supraorbital and a postorbital spine. Rostrum usually bifid, not very long. Eyes retractile to sides of carapace. Antennular fossae long and narrow. Basal article of antennae very long and narrow and placed almost in a vertical plane; movable portion much longer than the rostrum and inserted beside it. Outer maxillipeds spinous; merus narrower than ischium, constricted at base, rounded at extremity, palpus articulating at summit. Abdomen composed of six segments in both sexes. Chelipeds strong, spinous; merus trigonal; manus dilated; fingers broad. Ambulatory legs long and very slender.

Contains several species of which only one, which has a very wide range, inhabits American waters.

Material examined of Anomalothir frontalis

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°*F*						
Off Havana, Cuba						Jan. 1885	(1)	*Albatross*	1♂	15157	
Do			175			1877–78	79	*Blake*	1	2952, M.C.Z.	Cotype.
Off Montserrat	16 41 51	62 13 21	88		69	Jan. 16, 1879	155	do	1	2739, M.C.Z.	Identified by A. Milne Edwards.
Off Dominica	15 32 18	61 30 10	118	S. brk. Sh.	65	Jan. 24, 1879	177	do	1	2578, M.C.Z.	Do.
Off Barbados	13 11 54	59 38 45	73	Co. S. Sh.	70.75	Mar. 9, 1879	290	do	6	2575, M.C.Z. 2663, M.C.Z. 2743, M.C.Z.	Do.
Do	13 04 12	59 36 45	76	Co. brk. Sh.	64.75	Mar. 5, 1879	272	do	2	2572, M.C.Z.	Do.
Do	13 03 50	59 37 05	94	Co. brk. Sh.	61	do	276	do	1	2629, M.C.Z.	Do.

[1] Between stations 2319 and 2350.

American material examined of Achaeopsis thomsoni

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.
	Latitude N.	Longitude W.								
	° ′ ″	° ′ ″			°*F*					
Off Nantucket Shoals	39 51 15	69 29 45	250	gn. M. S.	41.6	Sept. 28, 1884	2262	*Albatross*	1 ♀	7190.
Off Marthas Vineyard	39 53 00	69 47 00	317	sft. gn. M.	40	Aug. 11, 1882	1096	*Fish Hawk*	1 ♀	18769.
Do	39 57 00	70 31 30	225	M.	41	Aug. 23, 1881	951	do	1 ♂	Y. U. M.
Off Georgia	30 41 00	79 26 00	440	Co. crs. S. Sh. For.	45.6	Apr. 1, 1885	2415	*Albatross*	1♂ 1♀	18119.
Pourtales Plateau, Florida Strait	24 16 00	81 22 00	(1)			June 27, 1893	56	State Univ. Iowa Exped.	1♂	18672.

[1] About 200.

ACHAEOPSIS THOMSONI (Norman)

Plate 10

Dorynchus thomsoni Norman, in Wyville-Thomson's Depths of the Sea, 1873, p. 175, text-fig. 34 (on p. 174), (type-locality, deep water between the Faroes and Scotland; type in Brit. Mus.).—Rathbun, Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 254.

Lispognathus furcillatus A. Milne Edwards, Crust. Rég. Mex., 1880, pp. 349 and 360 (index), pl. 31A, figs. 4 and 4*a* (type-locality, Grenada, 291 fathoms; type in Paris Mus.).

Lispognathus furcatus A. Milne Edwards, Crust. Rég. Mex., 1880, p. 364 (index); Bull. Mus. Comp. Zoöl., vol. 8, Dec. 28, 1880, p. 9.—Smith, Proc. U. S. Nat. Mus., vol. 6, 1883, p. 12.

Lispognathus (*Dorynchus*) *thomsoni* A. Milne Edwards, Comptes Rendus Acad. Sci. Paris, vol. 93, 1881, p. 932; transl. in Ann. Mag. Nat. Hist., ser. 5, vol. 9, 1882, p. 42; Arch. Miss. Scient. et Litt., ser. 3, vol. 9, 1882, pp. 16 and 39.

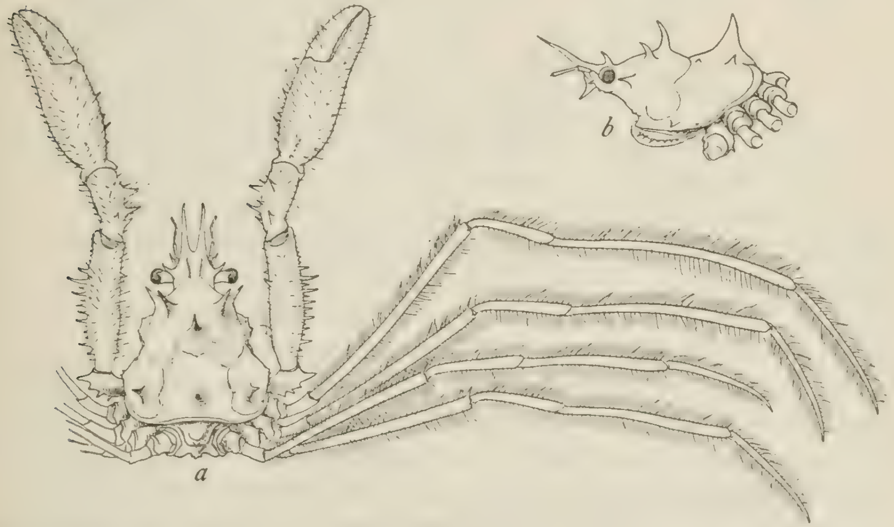

Fig. 7.—Achaeopsis thomsoni, station 951, Fish Hawk, × 2.4. *a*. Dorsal view. *b*. Carapace in profile. (After Smith.)

Lispognathus thomsoni Norman, Museum Normanianum, Crustacea, 1886, p. 6.—Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 28, pl. 5, figs. 2–2*c*.—A. Milne Edwards and Bouvier, Expéd. Sci. *Travailleur* et *Talisman*, Crust. Déc., 1900, p. 148, pl. 3, fig. 8 (color.); pl. 21, figs. 8–14, and synonymy.—Doflein, Brachyura *Valdivia*, 1904, p. 75.

Achaeöpsis thomsoni Rathbun, Trans. Linn. Soc. London, ser. 2, vol. 14, 1911, p. 248; Biol. Results "*Endeavour*", vol. 5, part 1, 1918, p. 4.—Stebbing, Trans. Roy. Soc. Edinburgh, vol. 50, 1914, p. 258.

Diagnosis.—Two slender rostral horns. Carapace spined. Fingers not gaping. Spine at end of merus of legs.

Description.—Carapace slightly pubescent; two median spines, cardiac and gastric; two branchial spines, the anterior sometimes reduced to a tubercle; one spine on each protogastric region; a slender spine above the orbit, and one at a little distance behind orbit. Subbranchial and pterygostomian regions each armed with a spine; lateral margin of hepatic and branchial regions with a few spinules. Rostrum upturned; horns longer than interorbital width, slightly divergent. Eyestalks with some sharp granules in front and a tubercle above at emargination of cornea. Basal antennal article with two rows of spinules and an outer terminal spine; first movable article half as long as second. Three rows of spines on maxillipeds.

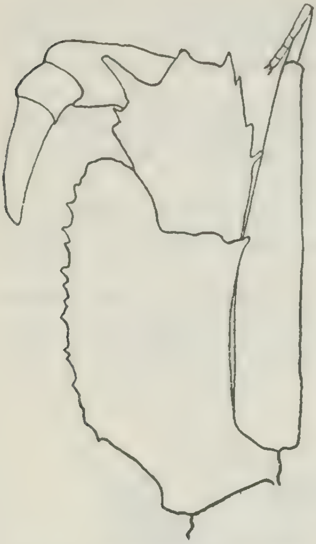

Fig. 8.—Achaeopsis thomsoni (18769), maxilliped, × 14.5

Chelipeds of male: Merus armed on margins with numerous spines; carpus narrow, spinous, the spines of upper inner margin longest; manus swollen, very narrow at base, upper margin armed for its proximal two-thirds with a few long spines and several spinules; fingers longitudinally sulcate, thin at the margins; teeth of cutting edges irregular, so that the fingers though not gaping do not fit evenly together at base. Chelipeds of female much more slender; armature similar to that of male except that in the manus the spines are continued to the fingers, which fit together more closely.

The ambulatory legs diminish gradually in length from first to last pair; they are furnished with long straight hairs as well as tufts of curled hair on upper surface; a terminal spine on the merus; first dactylus straight except at tip, the remainder more curved, diminishing in length but similar to one another; a fringe of hairs on lower margin, also a few distant spinules pointing toward the propodus, and a larger spinule near the tip.

Color.—Reddish white (A. Milne Edwards and Bouvier).

Measurements.—Male (18119), median length of carapace 10.8, length to tips of rostrum 13.4, width of carapace 8.8 mm.

Range.—Western Atlantic from Nantucket Shoals to Grenada. Eastern Atlantic from Faroe Islands to Cape Verde; Mediterranean; Gough Island (South Atlantic); Agulhas Bank, near Cape of Good Hope. Indian Ocean. West and South Pacific Ocean. South Australia. Depth, 100 to 2,080 meters (55 to 1,137 fathoms).

Material examined from American waters.—See table, page 28.

Genus PODOCHELA Stimpson

Podochela Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 194; type, *P. grossipes* Stimpson.—A. Milne Edwards, Crust. Rég. Mex., 1879, p. 189.

Podonema Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 197; type, *P. riisei* (Stimpson) = *Podochela riisei* Stimpson. *Podonema* was used by Solier in Gay's Hist. Chile, vol. 5, 1851, p. 19, for a genus of Coleoptera.

Driope Desbonne in Desbonne and Schramm, Crust. Guadeloupe, 1867, p. 2; type, *D. falcipoda* Desbonne = *Podochela riisei* Stimpson. Spelled "*Dryope*" in introduction, by Schramm, p. ii. *Dryope* was used by Robineau-Desvoidy in 1830 for a genus of insects.

Acrorhynchus A. Milne Edwards, Crust. Rég. Mex., 1879, p. 189; type, *A. depressus* A. Milne Edwards = *P. grossipes* Stimpson.

Anisonotus A. Milne Edwards, Crust. Rég. Mex., 1879, p. 195; type, *A. curvirostris* A. Milne Edwards = *P. curvirostris* (A. Milne Edwards).—A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 363.

Coryrhynchus Kingsley, Amer. Nat., vol. 13, 1879, p. 585; type, *C. riisei* (Stimpson) = *P. riisei* Stimpson. *Coryrhynchus* is substituted for *Podonema*.—Stebbing, Trans. Roy. Soc. Edinburgh, vol. 50, 1914, p. 259.

Ericerus Rathbun, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 223; type, *E. latimanus* Rathbun. Name preoccupied by Signoret, 1874, for a genus of Coccidae.

Ericerodes Rathbun, Proc. Biol. Soc. Washington, vol. 11, 1897, p. 164; name substituted for *Ericerus*.

Body and appendages usually ornamented with tufts of curved hairs, and also with straight hairs most often on lower parts of chelipeds and legs. Carapace somewhat depressed, elongate, pyriform; gastric region narrow, swollen. Rostrum arcuate or triangulate, sometimes prolonged in a spine. Supraorbital margin elevated or thickened. Eyes with short, stout pedicels, which terminate above in a prominent tubercle; cornea oblique, more projecting above than below. Postorbital tooth or lobe, when present, remote from eye and either well developed or reduced to a granule. Basal article of antennae very narrow, longitudinally sulcate. Sutures between sternal segments of male depressed; sternum of female deeply concave, margins elevated, laminate, forming a capsule. Abdomen of male with last two segments, of female with last three segments, coalesced; first two or three segments of male and four or five of female are visible in dorsal view.

Chelipeds of moderate length, merus curved, trigonal; palm either slender or dilated. Ambulatory legs slender, subprehensile, diminishing in length from first to fourth, the first sometimes much the longest; dactylus of first leg slenderer than the others and often unarmed; remaining dactyli more or less curved, lower edge spinulous.

Coast of middle America from North Carolina to Pernambuco, Brazil, and from San Luis Obispo, California, to the Gulf of California; Galapagos Islands; Bermudas. Shallow water to 201 fathoms.

ANALOGOUS SPECIES OF PODOCHELA ON OPPOSITE SIDES OF THE CONTINENT

Atlantic	Pacific
riisei.	*vestita.*
gracilipes.	*hemphillii.*

KEY TO THE SPECIES OF THE GENUS PODOCHELA

- A^1. Postorbital protuberance a large lobe.
  - B^1. Supraorbital margin armed with two long spines. Sternal segments of male elevated, flat, closely and finely granulate. Manus of adult male not inflated. Rostrum long, spiniform, arched upward. **curvirostris**, p. 50.
  - B^2. Supraorbital margin armed with a series of spinules or small spines. Sternal segments of male not closely and finely granulate.
    - C^1. Manus of adult male inflated, fingers widely gaping. Sternum of male pubescent, not granulate nor laminate. No prominent lobe behind and below postorbital lobe. (Rostrum in doubt, perhaps bilobed.) **lobifrons**, p. 57.
    - C^2. Manus of adult male not inflated, fingers contiguous. Sternum of male laminate, each lamina overlapping the one behind it; surface sparingly granulate with scattered, pointed granules. A prominent lobe behind and below postorbital lobe. Rostrum short, pointed. **lamelligera**, p. 52.
- A^2. Postorbital protuberance a granule, or wanting.
  - B^1. Rostrum long, ending in a spine. Manus inflated in male.
    - C^1. Only one tubercle on first abdominal segment.
      - D^1. Rostrum very long, much more than half as long as postrostral portion of carapace **latimanus**, p. 56.
      - D^2. Rostrum less than half as long as postrostral portion of carapace.
        - E^1. Size small (not over 13 mm. long). Gape between fingers of adult male subtriangular, deep at proximal end. Neck long. Rostral spine slender **gracilipes**, p. 47.
        - E^2. Size large (up to 24 mm. long). Gape between fingers of adult male suboval. Neck short. Rostral spine stouter, gradually tapering **hemphillii**, p. 49
    - C^2. Two median tubercles on first abdominal segment. Rostrum from three-fifths to one-half as long as postrostral portion of carapace. **barbarensis**, p. 54.
  - B^2. Rostrum short, not ending in a spine.
    - C^1. Rostrum thin, hood-shaped, hollow beneath.
      - D^1. Rostrum somewhat triangular, widest at its origin.
        - E^1. A postorbital granule. Sternum of male not granulate.
          - F^1. Sternum and basal articles of legs not vermiculate. Gape narrow between fingers of adult male.
            - G^1. Dactyls of last three ambulatory legs curved, short, contained twice, or more than twice, in their respective propodites. Cardiac prominence low **riisei**, p. 33.
            - G^2. Dactyls of last three legs less curved and longer, those of last two pairs contained less than twice in their respective propodites. Cardiac prominence higher and more acute or ending in a short spine **sidneyi**, p. 39.
          - F^2. Sternum and basal articles of legs vermiculate. Cardiac prominence elongate, compressed. (Gape between fingers of adult male not known.) **vestita**, p. 42.

E^2. No postorbital granule. Sternum of male closely covered with pearly granules. Median carina of rostrum sharp, continued to front edge. Gape narrow between fingers of adult male **margaritaria**, p. 43.

D^2. Rostrum not triangular, very broadly rounded, widest in front of its origin. Concave surface of basal antennal article very broadly triangular ---------- **algicola**, p. 41.

C^2. Rostrum thick, subtriangular, not hollow beneath.

D^1. Propodus of first leg four or more times as long as dactylus. Propodus of last two legs considerably longer than dactylus and slightly curved ---------- **macrodera**, p. 44.

D^2. Propodus of first leg twice, or at most three times as long as dactylus. Propodus of last two legs very little longer than dactylus and strongly curved ---------- **grossipes**, p. 45.

Macropodia occidentalis Guilding (Trans. Linn. Soc. London, vol. 14, 1824, p. 335), from the Caribbean Sea, is probably a species of *Podochela*, but the description is too short to permit of its exact determination.

PODOCHELA RIISEI Stimpson

Plate 11, figs. 1 and 2; plate 208, fig. 2

Podochela riisei Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 196, pl. 2, fig. 6 (type-locality, Island of St. Thomas; type not extant).—Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 11.—Aurivillius, K. Svenska Vet.-Akad. Handl., vol. 23, 1889, p. 34, pl. 4, fig. 7.—Rathbun, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 48; Amer. Nat., vol. 34, 1900, p. 508, fig. 1 (after A. Milne Edwards); Bull. U. S. Fish Comm. for 1900, vol. 20, part 2 (1901), p. 54.—Verrill, Trans. Conn. Acad. Arts & Sci., vol. 13, 1908, p. 398.—Hay and Shore, Bull. Bur. Fisheries, vol. 35, 1915–16 (1918), p. 453, pl. 37, fig. 9.

Podochela deflexifrons Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 197 (type-locality, West Indies; type not extant).

Driope falcipoda Desbonne in Desbonne and Schramm, Crust. Guadeloupe, 1867, p. 2 (type-locality, Guadeloupe; type perhaps not extant).

Podonema riisei Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 126.—Miers, Journ. Linn. Soc. London, vol. 14, 1879, p. 643.

Podonema hypoglypha Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 127 (type-localities, Key West and S. W. of Loggerhead Key, 4 to 9 fathoms; types not extant).

Podochela spatulifrons A. Milne Edwards, Crust. Rég. Mex., 1879, p. 192, pl. 34, figs. 2–2*f* (type-locality, Guadeloupe at considerable depth; type in Paris Mus.).—Rathbun, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 48.

Podochela hypoglypha A. Milne Edwards, Crust. Rég. Mex., 1879, p. 194.—Rathbun, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 49; not Univ. Iowa Studies, vol. 9, 1921, p. 80.

Coryrhynchus riisei Kingsley, Amer. Nat., vol. 13, 1879, p. 585; Proc. Acad. Nat. Sci. Philadelphia, vol. 31, 1879, p. 384.

Diagnosis.—Rostrum hood-shaped, hollow beneath. Fingers of mature male narrowly gaping. Last leg about one and a half times as long as carapace. Dactyli of legs falcate, that of second leg contained two and a half or more times in the length of the propodus.

Material examined of Podochela riisei

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°F						
North Carolina:											
Off Beaufort fishing grounds.	34 19 00	76 58 00	13.5	Co. S. Sh		Sept. 6, 1913	7943	*Fish Hawk*	2♂	51004	
Do						Aug. 1, 1914		do	1♂	47960	
Do	34 20 15	76 49 00	16	hrd		July 14, 1915	8283	do	1♂	52761	
Florida:											
Off Carrabelle	Carrabelle, N. by W., 14⅔ miles.		10		60.2	Jan. 16, 1913	24	do	1♂	50989	
					°C						
Aucilla section	29 34 00	84 07 20	10.5	R. Co	17.6	Dec. 5, 1901	7195	do	1♀	47019	
Do	29 45 48	83 57 30	7	S. Co	21	Nov. 6, 1901	7149	do	1♂ 1♀	46992	
Do	29 48 10	83 55 15	5	S. Co	21	do	7148	do	1♂	46989	
Do	29 52 10	83 51 47	3	S. Co	20	do	7147	do	2♂	46991	One has a Rhizocephalid parasite.
Deadmans Bay section	29 37 00	83 35 15	3.5	S. G	15	Dec. 6, 1901	7206	do	1♀	47004	
Pepperfish Key section	29 30 50	83 31 40	3.25	sdy	22	Nov. 5, 1901	7145	do	2♂	46988	
Do	29 29 30	83 33 25	4.75	sdy	21.5	do	7146	do	1♀	46990	
Do	29 23 00	83 27 05	3.5	S. G	16.3	Nov. 21, 1901	7159	do	2♀	46993	
Do	29 21 00	83 32 00	6.75	rky	16.7	do	7160	do	2♂	46994	
Do	29 18 00	83 37 00	8	rky	18	do	7161	do	1♂	46995	
Do	29 15 30	83 27 30	5.5	sdy	16.2	do	7166	do	1♀	46997	
Do	29 13 15	83 32 30	7.25	rky	17.2	do	7165	do	1♀	46996	
Do	29 06 15	83 33 00	8	rky	16.7	Nov. 27, 1901	7171	do	1♀	46998	
Off Cedar Keys						Feb. 1887		Lieut. J. F. Moser, U. S. N., U. S. C. S. Str. *Bache.*	2♂	18074	Basal antennal article of *hypoglypha* form.
					°F						
Do	Cedar Keys Light, N. ¾ E., 21¾ miles.		5.75	Co	63.45	Jan. 11, 1913	21	*Fish Hawk*	1♂ 1♀	50988	
Do	Cedar Keys Light, NNE. ¾ N., 11¼ miles.		5.5	Co. Sh	63.45	do	22	do	1♂	50990	
					°C						
North Key section	29 05 00	83 22 30	5.5	sdy. rky. Co	15.5	Nov. 27, 1901	7177	do	1♂ 8♀ (1 ovig.)	47018	
Do	29 02 30	83 14 00	4.5	sdy	14.8	Nov. 28, 1901	7181	do	2♂	46999	
Do	29 00 00	83 18 45	5.75	rky. Co	15.3	do	7182	do	1♂	47048	Actinians and sponges attached.
Do	29 57 30	82 58 00	3	rky	15.5	Dec. 6, 1901	7207	do	1♀	47003	
Do	28 55 30	83 02 00	4	rky	15.3	Dec. 9, 1901	7208	do	1♂	47022	
Do	28 55 00	83 28 10	10.5	R. Co	17	Nov. 28, 1901	7184	do	1♂	47001	

Do	28 52 45	83 07 00	5.75	rky	16.1	Dec. 9, 1901	7209	do	1♂ 2♀	47026	
Do	28 52 15	83 24 00	7.5	R. Co.	16.2	Nov. 27, 1901	7183	do	1♀	47000	
Do	28 47 55	83 16 30	8	rky. grsy	17	Dec. 9, 1901	7211	do	2♂ 2♀	47020	
St. Martins section	28 45 30	83 00 00	5	S. brk. Sh. G.	11.7	Jan. 17, 1902	7224	do	2♂	47025	
Do	28 42 30	83 09 45	7	S. brk. Sh. G.	12.2	do	7225	do	2♂	47027	
Do	28 41 00	83 15 15	8.5	rky	13.5	do	7226	do	1♂ 1♀	47028	
Do	28 39 15	83 20 30	10	sdy. grsy. rky.	13.8	do	7227	do	1 ovig. ♀	47029	
Do	28 34 30	83 15 45	7.5	rky. sdy	13	Jan. 15, 1902	7220	do	1♂	47007	
Do	28 33 30	83 19 00	9	sdy. grsy	13.6	do	7219	do	1♂ 1♀	47024	
Do	28 27 15	83 19 00	10.5	rky. sdy	14	do	7218	do	1♂	47006	
Do	28 26 30	83 08 00	10	sdy. grsy	13.6	do	7216	do	1♂ 2♀	47023	One female has a Rhizocephalid parasite.
Do	28 26 00	83 02 30	7.5	rky. Co.	13	do	7215	do	1♂ 3♀	47021	Sponge and actinian attached.
Do	28 25 15	82 57 00	5.25	S. G	12	do	7214	do	1♂	47005	
Anclote section	28 20 15	83 12 15	10.25	S. G	13.5	Jan. 24, 1902	7241	do	1♀	47059	
Do	28 19 45	83 06 30	8.5	rky. G	13	do	7240	do	1♂	47010	
Do	28 19 30	83 01 00	6.25	rky. G	12.5	do	7239	do	2 ovig. ♀	47033	
Do	28 08 30	83 12 00	11	hrd. & G.	14	Jan. 23, 1902	7232	do	1♂	47008	
Do	28 08 30	83 10 00	10	rky. C	13.5	do	7231	do	2♂ 1♀	47031	Two pterygostomian tubercles on each side.
Do	28 08 00	83 04 30	8	rky. grsy	13.5	do	7230	do	1♀	47030	
Do	28 01 30	83 08 00	11	rky	13.5	do	7234	do	2 ovig. ♀	47032	One specimen has two pterygostomian tubercles on each side.
Do	28 01 30	83 12 30	13	rky. Sh	14	do	7233	do	1♂	47009	
Do	Anclote Light, bearing E. ⅞ N., 21½ miles.		12.5	R. Co. S	17.2	Mar. 28, 1901	7106	do	1♂ 1♀	25587	
Do						1901		J. E. Benedict	1♀	25578	
Highland section	27 55 30	83 11 30	13	Co. R.	15.2	Jan. 28, 1902	7253	do	1♀	47011	
Do	27 49 30	83 02 45	7.75	S	15	do	7256	do	1♂ 3♀	47034	
Pass-a-Grille			beach.					Mrs. E. A. Hawley.	1♂	41023	
Sarasota Bay								Union College	2♂ 5♀	42581–42583	
Do								Boston Soc. Nat. Hist.	1♂ 1 ovig. ♀	53053	
Off Gasparilla Island	Gasparilla Light, E. by S., 6¼ miles.		7	hrd. S. brk. Sh.		Jan. 4, 1912	13	*Fish Hawk*	3♂	50991	
Off Sanibel Islands	Bell buoy off Sanibel Islands Light, NE., 10-2½ miles.		6-7	brk. Sh. Co.		Jan. 1, 1913	9	do	2♂	50987	
Off Johns Pass	Johns Pass, E. ¾ N., 9½ miles.		6			Jan. 9, 1913	18	do	1♀	50986	
West Florida						1891		J. B. Henderson and C. T. Simpson.	2♂ 1♀	18075	Basal antennal article of *hypoglypha* form.
Marco						1885		H. Hemphill	1♀	15161	
Off Cape Sable						Dec. 17, 1902		*Fish Hawk*	1 ovig. ♀	47017	
Do	25 00 55	81 22 15	4	rky		Dec. 19, 1902	7372	do	1♂	47039	

Material examined of *Podochela riisei*—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°C						
Off Cape Sable	25 09 04½	81 18 35	3.25	rky. Co		Dec. 16, 1902	7351	*Fish Hawk*	1♂ 3♀	47038	One female has a Rhizocephalid parasite.
Do	25 00 40	81 15 37	2.5	rky		Feb. 19, 1902	7370	do	2♂	47012	
Florida Bay	5½ miles N. NW. ¼ W. of Channel Key.		1⅙	S. M. G		Jan. 29, 1903	7439	do	2♂	47015	
Upper Jewfish Bush Lake.	6¼ miles SE. by E. of Sandy Key.		1⅔	rky		do	7437	do	2♂ 3♀	47044	
Hawk Channel	½ mile SE. by S. of SE. end of Duck Key.		2⅓	rky		Jan. 27, 1903	7429	do	1♀	47015	
Off Duck Key	Duck Key, N., 1¼ miles		2¾	Co. Sh		Dec. 20, 1912	4	do	1 ovig. ♀	50992	
Grassy Key Lake	3¾ miles NW. ½ N. of E. end of Grassy Key.		1⅓	rky		Jan. 28, 1903	7431	do	1♂	47016	
Do	2¾ miles N. ½ W. of Channel Key.		1¼	rky		Jan. 29, 1903	7440	do	1♂	47046	
N. of Knights Key Channel.	3 miles NE. by N. of East Bahia Honda Key.		1⅚	rky		Jan. 22, 1903	7412	do	1♂ 2♀ (1 ovig.)	47041	
Do	3¾ miles N. NE. of West Bahia Honda Key.		2	S. G. rky		do	7413	do	2♂	47013	
Do	6 miles N. NE. ½ E. of East Bahia Honda Key.		1⅚	barry		do	7414	do	1♀	47014	
Do	2 miles NE. by N. of Basin Bank.		1½	rky		do	7417	do	1♂	47042	
Do	1½ miles NE. by N. of Knights Key.		1¼	rky		do	7420	do	1♂	47043	
Pigeon Key Lake	1 mile E. of Bahia Honda Key.		1¾	rky		Jan. 7, 1903	7404	do	1 ovig. ♀	47040	
Key West						Dec., 1883		D. S. Jordan	1♀	15162	
Off Key West, inside the reef.	Key West Light to E. Channel Bar Buoy 71° 53′, to Beacon "A" 74° 46′.		5¼	Co. S. G	20	Feb. 13, 1902	7278	*Fish Hawk*	1♂	47036	
West Channel, entrance to Key West.	Midchannel Buoy bearing W. by S. ¼ W., ½ mile.		7¾	Co. S	20	do	7271	do	1♂	47035	
Gulf of Mexico, off Northwest Channel.	24 38 40	81 56 28	5½	Co	19.5	Feb. 24, 1902	7295	do	2♀ (1 ovig.)	47037	

Off Boca Grande	Boca Grande Light, N. NE. ⅜ E., 24½ miles, to NE. ¼ N., 20 miles.	4¾		°F 68.5	Jan. 2, 1913	10	do.	1 ♀	50984
Tortugas		4					J. B. Henderson	3 ovig. ♀	47050
Do		16					do	1 ovig. ♀	47060
Do					1893		State Univ. Iowa Exped.		Mus. S. U. I.
Bahamas: Off Little Cat Island on submerged bank connecting it with Eleuthera.		3-13			July 18, 1893	68	do		do
Cuba: On reef Lavesos Italienos, opposite Cayo Lavesos.		2-3	Co. S. R.		June 2, 1914	14	*Tomas Barrera*	2♂ 1♀	48721
Jamaica: Kingston Harbor					May – July, 1896.		F. S. Conant	1♀	19581
Porto Rico: Off Vieques Island	Culebrita Lighthouse, NE. by N., 10 miles.	15	Co.	°C 26	Feb. 10, 1899	6091	*Fish Hawk*	1♂ 1♀	24094
Do	Pt. Mula Lighthouse, E. ½ N., 11¼ miles.	6	Co.	27.3	Feb. 14, 1899	6096	do	1♀	24117
St. Thomas	Sail Rock, W. by N. ½ N., 6 miles.	20–23	Co.	25.8	Feb. 6, 1899	6079	do	1♀	24204
Brazil: Rio Janeiro							*Hassler*	1 ovig. ♀	1832, M.C.Z.

Description.—Carapace with a cardiac and two median gastric tubercles; a downward-pointing tubercle or lamina on the hepatic region. Rostrum hood-shaped, thin, hollow beneath, a median carina above. Postorbital tooth small, tuberculiform; behind and below it a small tubercle. Pterygostomian region protuberant, more or less compressed and prolonged in a tubercle at middle. Sternum of male with segments flattened and separated by deep grooves; area in front of abdomen subvertical, divided into two protuberances which are narrow, longitudinal and parallel. Basal antennal article gradually narrowed anteriorly, longitudinally grooved through the middle.

Chelipeds of adult male stout, manus dilated, fingers narrowly gaping in basal two-thirds; chelipeds of female and immature male slender, manus not dilated, fingers in contact. Ambulatory legs of first pair much the longest, about two and a half times as long as carapace, its merus stouter than the others, dactylus about one-fifth as long as the propodus, unarmed, and much slenderer and straighter than in the other legs; second, third, and fourth legs decreasing regularly in length, the second twice or two and a fourth times, the fourth leg about one and a half times the length of the carapace; propodites unequal, distal portion slightly thickened and bent upward, but straight, not con cave, on the edge facing the dactylus; the surface where the tip of the dactylus touches is densely haired; dactyli moderately curved, second propodus two and a half times as long as its dactylus, third propodus a little over twice its dactylus, fourth propodus just twice its dactylus (fig. 9, *b*).

Variations.—Rostrum variable as to shape and length. Margins of basal antennal article thick in the old but may be quite thin in younger ones; the anterior end of the article is always truncate. Sternal segments of male usually with a rounded surface, but sometimes flattened.

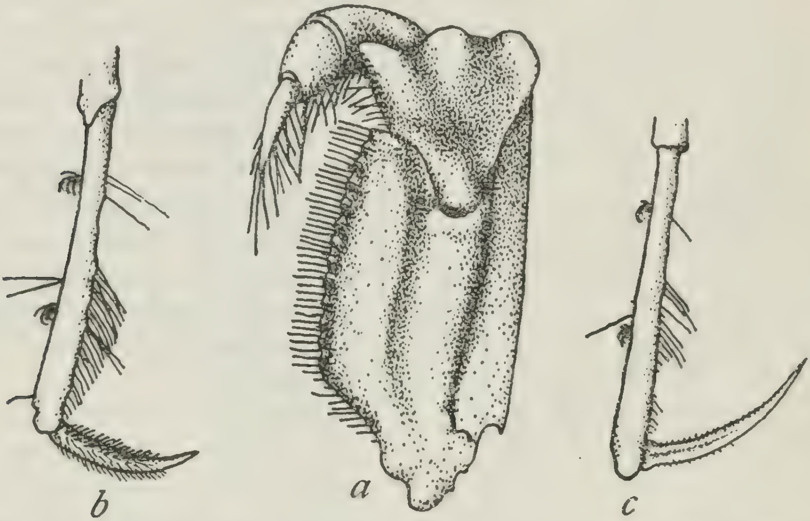

Fig. 9.—*a*. Podochela riisei (18075), maxilliped, × 12. *b*. Podochela riisei (50991), propodus and dactylus of last leg, × 5. *c*. Podochela sidneyi (8814), propodus and dactylus of last leg, × 5

Color.—One male (47042) preserved in alcohol has retained the color pattern in brown: A longitudinal band along outer margin of branchial and postorbital regions; a slightly curved band each side of median line beginning at line of larger gastric tubercle and ending at cardiac tubercle; rostrum and mesogastric region spotted with irregular patches; first two legs are largely brown.

Measurements.—Male (47048), length of carapace 20.6, width 16 mm. Female (53053), length 20.5, width 16.6 mm. Female (1832), length 23.2, width 19.6 mm.

Range.—North Carolina; Bahamas; west coast of Florida (common) to Cuba and other West Indian Islands as far southeast as St. Thomas; south of Pernambuco, Brazil (Miers). Rio Janeiro. Bermudas (Verrill). Shallow water to 30 fathoms.

Material examined.—See table, pages 34-37.

PODOCHELA SIDNEYI[15] Rathbun

Plates 12 and 13

Podochela reisei A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 193, pl. 34, figs. 1 (ambulatory legs excepted), 1*a*.

Podochela riisei SMITH, Rept. U. S. Fish Commr. for 1885 (1886), p. 620 [16], not synonymy.

Podochela sidneyi RATHBUN, Proc. U. S. Nat. Mus., vol. 64, art. 14, 1924, p. 1 (type-locality, off Cape Hatteras, North Carolina, 49 fathoms, station 2297, *Albatross;* 1 male holotype, Cat. No. 7253, U. S. N. M.).

Diagnosis.—Dactyls of last three legs elongate, more than half as long as their respective propodites. Palm of adult male very slightly inflated. Sternal segments of male forming flat, sharp-edged plates.

Description.—Closely related to *P. riisei;* most easily distinguished by the longer and straighter dactyli of the last three ambulatory legs. Cardiac and posterior gastric prominences more produced than in *riisei*, spiniform. Rostrum a little narrower at base and in consequence more triangular. Pterygostomian region bearing a long thin lamina which may be subtriangular or produced downward in a lobe. The sternal segments are flat, and the flat surfaces have sharp, cristate margins; the flat, elongate tubercles in front of the abdomen are more triangular and in an oblique plane, enclosing the end of the abdomen. The margins of the basal antennal article are thinner, deeper, and more convergent anteriorly, the lobe at the posterior end of the outer margin is more pronounced.

Chelipeds of adult male with manus less dilated than in *riisei*, gape narrower, prehensile teeth more numerous and more uniform in size. Legs longer than in *riisei;* first leg three or more times as long as carapace, dactylus about one-seventh as long as propodus; second leg two and a half to two and two-thirds as long as carapace, fourth leg about twice as long as carapace. Dactyli of last three pairs less curved than in *riisei* and distinctly longer; second propodus no more than twice as long as its dactylus, third propodus from one and a half to one and three-fourths time its dactylus, fourth propodus from one and a third to one and a half times.

Measurements.—Male, holotype, length of carapace 14, width 10.7 mm. Larger male (48676), length 17.3, width 13 mm.

Range.—North Carolina; eastern part of Gulf of Mexico (sparingly on west coast of Florida); northwestern Cuba and Yucatan Channel. Depth, 2 to 49 fathoms.

Material examined.—See table, page 40.

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[15] Named for Prof. Sidney I. Smith.

Material examined of Podochela sidneyi

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
North Carolina:	° ′ ″	° ′ ″			° C						
Off Cape Hatteras	35 38 00	74 53 00	49	bk. M. brk. Sh.		Oct. 20, 1884	2297	*Albatross*	2♂	7253, 8799	1♂ is holotype.
Do	35 35 20	74 58 45	27	crs. gy. S.		do	2296	do	1♀	8814	
Do	35 21 25	75 24 25	13	crs. gy. S.		Oct. 19, 1884	2285	do	1♂ 1♂ 1♀	7268 8792	In Yale Univ. Mus. Identified by S. I. Smith.
Do	35 20 50	75 19 50	16	gy. S. brk. Sh.		do	2277	do	1 y. ♀	8773	
Do	35 20 40	75 18 40	16	gy. S.		do	2275	do	1 y.	8777	In Yale Univ. Mus. Identified by S. I. Smith.
Alabama	29 27 30	87 48 30	30	crs. S. bk. Sp. Sh.		Mar. 4, 1885	2390	do	2♂ 2♀	15163	
Florida:											
Off Pensacola			3–4			July, 1893		J. E. Benedict	1♂	18153	
Off Apalachicola	28 45 00	85 02 00	30	gy. S. brk. Co.		Mar. 15, 1885	2405	*Albatross*	2♂ 1♀	18073	
Do	28 46 00	84 49 00	26	crs. S. Co.		do	2406	do	2♂ 2♀	9794	
Deadmans Bay section	29 30 15	83 41 30	5. 75	S.	15. 2	Dec. 6, 1901	7204	*Fish Hawk*	1♂	47002	
Pepperfish Key section	29 08 15	83 42 00	10	S.	19	Nov. 21, 1901	7163	do	1♀	47056	
Anclote section	28 14 00	83 13 00	11	rky. Co.	13. 8	Jan. 24, 1902	7242	do	1♀	47058	
Gulf of Mexico, off Northwest Channel.	24 44 50	81 55 50	10. 25	hrd. smooth	19	Feb. 14, 1902	7292	do	1♂	47057	
Tortugas			16			July 10, 1911		J. B. Henderson	1♂	54723	
? Florida			7–10					Union College	1♂	56013	With *Mithrax hispidus*.
Cuba:											
Bahia			2–12	M. Co.		June 4, 1914	15	*Tomas Barrera*	2♂	48676	
Bahia Honda, on wharf						June 1–3, 1893		State Univ. Iowa Exped.	2♀	Mus. S.U.I.	
Yucatan Channel: North of Cape Catoche.	22 07 30	87 06 00	21	wh. R. Co.		Jan. 30, 1885	2363	*Albatross*	1♂	18147	

PODOCHELA ALGICOLA (Stebbing)

Coryrhynchus algicola Stebbing, Trans. Roy. Soc. Edinburgh, vol. 50, 1914, p. 259, pl. 23 (type-locality, off the coast of Brazil, lat. 18° 24′ S., long 37° 58′ W., 36 fathoms; station 81, *Scotia;* type in Dr. Bruce's Mus. Antarctica, Edinburgh, except first antennae and mouth parts which are mounted and in Mr. Stebbing's collection.

Diagnosis.—Allied to *P. riisei.* Rostrum short, broadly rounded. A pair of tubercles on surface of carapace between eyes. Edges of fingers (of female) crenulate, not denticulate. Ventral concave surface of basal antennal article acute at distal end, broadly triangular. (After Stebbing.)

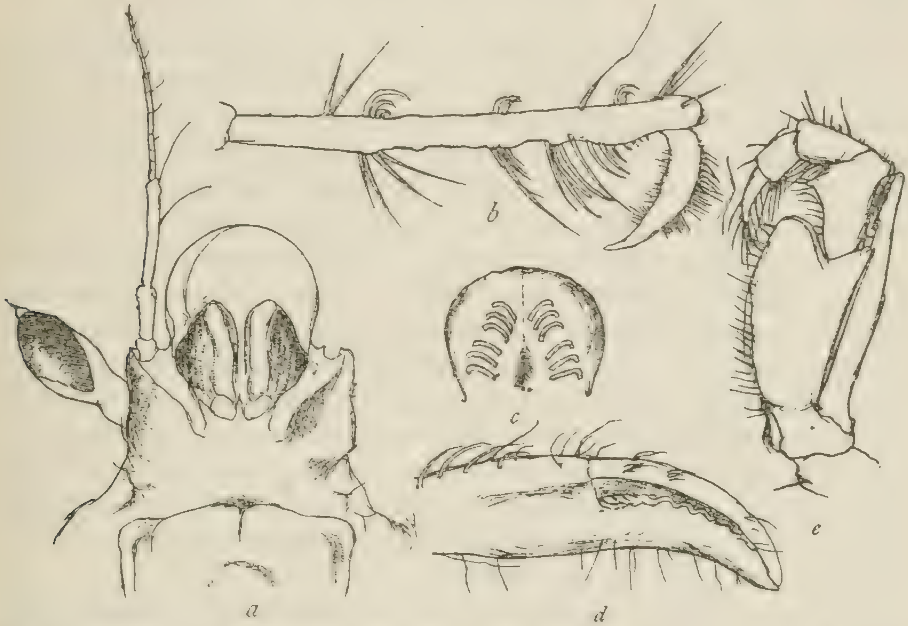

Fig. 10.—Podochela algicola, female holotype, carapace 19 mm. long. *a.* Anterior portion, ventral view. *b.* Propodus and dactylus of third ambulatory leg. *c.* Rostrum. *d.* Chela. *e.* Maxilliped. (After Stebbing.)

Remarks.—This may be the same form as the Brazilian specimen referred by Miers to *riisei.* The rostrum of *algicola* widens more than in *riisei*, but the dactyl of the fourth pereiopod (third ambulatory) is of the same shape as in *riisei;* the penult article shown in figure "prp. 4" should undoubtedly be divided in two, as shown in the entire figure of the animal.

Measurements.—Female, holotype, length of carapace 19, width 13, length of first ambulatory leg about 47 mm. (Stebbing.)

Range.—Known only from the type specimen. (See above.)

PODOCHELA VESTITA (Stimpson)

Plate 14

Podonema vestita Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 10, 1871, p. 97 (type-locality, Cape St. Lucas; type not extant).

Podochela vestita A. Milne Edwards, Crúst. Rég. Mex., 1879, p. 195.

Podochela (*Coryrhynchus*) *mexicana* Rathbun, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 225 (type-locality, Gulf of California, 11 fathoms; holotype, Cat. No. 17330, U. S. N. M.).

Diagnosis.—Rostrum short, rounded. Neck short. Margins of basal antennal article thin, prominent. Legs filiform, propodites without thumb-process, dactyli short. Sternum vermiculated.

Description.—A species with short neck, very high gastric region, two prominent gastric tubercles, cardiac tubercle uncommonly large, laminate, the lamina continued forward in a blunt ridge; a large, laminate, hepatic lobe, a thin pterygostomian ridge bearing a small lobe. Rostrum short, arcuate, thin. Basal antennal article anteriorly narrowed, margins thin, outer margin broadly bilobed.

Chelipeds of a probably immature male feeble, palms slightly swollen, fingers meeting. Legs slender; first one less than three times as long as carapace, its propodus slender, about seven times as long as dactylus, which is unarmed, slenderer, and less curved than in the other legs; fourth leg about as long as carapace; second, third, and fourth legs similar, diminishing successively, as do also their propodal segments, which are a little thickened distally, that of the second leg three times as long as dactylus, that of the fourth leg twice as long as dactylus, that of the third leg intermediate; the three dactyli are of the same size and form.

Sternum and basal segments of legs vermiculated. Sternal segments in the form of raised plates with sharp edges and separated by deep depressions.

Said by Stimpson to be more hairy than *riisei* or *lamelligera*.

Measurements.—Male (17330), length of carapace 10, width 8, length of cheliped about 12, of first leg about 27, second 21, fourth 11 mm. Female (Stimpson), length of carapace 0.52 inch (13.2 mm.), width 0.42 inch (10.7 mm.).

Range.—Mexico: Gulf of California to Cape St. Lucas.

Material examined.—Off Adair Bay, Mexico, in the Gulf of California; lat. 31° 21′ 00″ N.; long. 113° 49′ 00″ W.; 11 fathoms; S. brk. Sh. G.; temp. 67° F.; March 25, 1889; station 3024, *Albatross;* 1 male, thin shell (17330), holotype of *P. mexicana.*

PODOCHELA MARGARITARIA Rathbun

Plate 15; plate 209, fig. 1

Podochela margaritaria Rathbun, Proc. Washington Acad. Sci., vol. 4, 1902, p. 283, pl. 12, fig. 12 (type-locality, Tagus Cove, Albemarle Island, 12 fathoms; holotype, Cat. No. 24834, U. S. N. M.).

Diagnosis.—Rostrum hood-shaped, carinate. No postorbital lobe. Sternum coarsely granulate. Fingers of adult male narrowly gaping.

Description.—Ventral surface covered with coarse, pearly granules; dorsal surface inconspicuously granulate, especially on the depressed portions and the branchial regions. A high conical tubercle on the cardiac and on the gastric region. Rostrum long, hood-shaped, the hood thin, sharply cristate on median line. No postorbital lobe. Hepatic region small, swollen, converging to a small, downward-pointing tubercle. A similar pterygostomian tubercle. Sternal segments high, closely covered with white granules, and separated by deep smooth depressions; two tubercles in front of the abdomen terminate ridges leading upward between which is a deep trough.

Basal antennal article narrowed anteriorly, deeply concave, lateral margins prominent. Chelipeds moderately roughened, chiefly on the margins, a few tubercles on the carpus, manus swollen, fingers narrowly gaping except near the tips. Legs of moderate length, first pair two and a half times length of carapace, dactylus short, slender, curved, propodus five times as long as dactylus. Remaining legs respectively twice, one and two-thirds and one and a half times the carapace length; dactyli of similar length and curvature, the second a little slenderer. Propodites distally thickened and bent upward, the amount of thickening increasing from second to fourth leg. The second propodus is two and a half times its dactylus, the third twice, and the fourth a little less than twice its dactylus.

Measurements.—Male, holotype, length of carapace 15, width 11 mm.

Range.—Known only from Tagus Cove, Albemarle Island, Galapagos Islands.

Material examined.—

Tagus Cove; 12 fathoms; Stanford Univ. Exped.; one male holotype (24834).

Tagus Cove, on reef north of Tagus Hill; 2 males, 1 female (Stanford University).

PODOCHELA MACRODERA Stimpson

Plate 16

Podochela macrodera STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 196 (type-localities, St. Thomas and Key Biscayne, Florida; types not extant).—A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 191, pl. 34, figs. 3–3*c*.—RATHBUN, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 50; Bull. U. S. Fish Comm. for 1900, vol. 20, pt. 2 (1901), p. 53; in Boeke, Rapport Vischerij Kolonie Curaçao, 1920, p. 343 [27].

Diagnosis.—Rostrum short, thick, subtriangular. Fingers of adult male widely gaping. Distal ends of propodites of ambulatory legs curved.

Description.—Cardiac region depressed, bearing a low tubercle; two median gastric tubercles; hepatic region swollen, its tubercles very small; a small tubercle on the pterygostomian region. Rostrum small, short, thick, subtriangular, obtuse or subacute, flat above, sides steeply inclined. Sternum of male with smooth convex segments separated by shallow grooves. In front of the abdomen are two white-tipped tubercles. First abdominal segment in male and first and second in female with a white median tubercle.

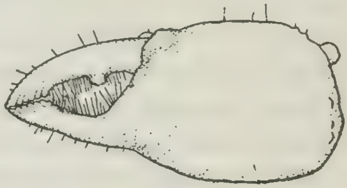

FIG. 11.—PODOCHELA MACRODERA, MALE (6368), LEFT CHELA, × 4.66

Basal antennal article long, much narrower anteriorly, lateral margins thick and convex, uniting on the anterior third. Chelipeds of adult male stout, manus much dilated, fingers widely gaping. Ambulatory legs of first pair about two-and-a-half times, of second pair about one and two-thirds times, of fourth pair about one and a third times the length of the carapace; first pair similar to that of *riisei*. Propodites of last three pairs falcate, the distal portion being curved, and the tip of the curved dactylus fitting against a thumb process; second propodus about two and a fourth times its dactylus, third propodus a little over twice, and fourth propodus less than twice its dactylus.

Measurements.—Male (6368), length of carapace 15.3, width 11.2 mm. Female (18670), length 10.8, width 8.6 mm.

Range.—Bahamas; Florida Keys from Key Biscayne (A. Milne Edwards) to Sand Key; Yucatan Channel; West Indies from Cuba and Porto Rico to Guadeloupe (A. M. E.). Curaçao. Shallow water to 14¾ fathoms; 50 fathoms (unusual).

Material examined.—See table, pages 46–47.

PODOCHELA GROSSIPES Stimpson

Plate 208, fig. 1

Podochela grossipes Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 195 [67], pl. 2, fig. 5 (type-locality, island of St. Thomas, W. I.; type not extant).—A. Milne Edwards, Crust. Rég. Mex., 1879, p. 190, pl. 34, figs. 4, 4*a*.—Aurivillius, K. Svenska Vet.-Akad. Handl., vol. 23, 1889, p. 34.

Acrorhynchus depressus A. Milne Edwards, Crust. Rég. Mex., 1879, p. 190.

Diagnosis.—Rostrum short, triangular, acute. Last two pairs of legs with the penult article short, strongly curved, and the dactylus when closed forming an oval gape.

Description (after Stimpson).—Body everywhere short-pubescent; feet setose. Rostrum acute, regularly triangular, very little longer than broad at base, setose. Chelipeds with the hand much inflated; fingers much shorter than palm, slender, gaping, and annulated with crimson near tips. First pair of ambulatory legs very robust, with a single series of very short, small tufts of curled hair along upper side; penult article very thick, armed on lower edge with a distinct tooth or thumb-process, against which the extremity of the dactylus closes. The rest of the legs become progressively shorter and more slender posteriorly and have much shorter hands; in the last two pairs the penult article is scarcely longer than the dactylus, much curved, and concave within, with the thumb-process at the base; the dactylus is almost always closed against this process and can be opened only to a limited extent, so that the last two articles are transformed into a strongly subcheliform or ancoral hand, which projects at a right angle from the carpus.

The specimen described and figured by A. Milne Edwards is much larger than Stimpson's type; it has a much longer rostrum and longer propodites of the first and second legs.

Measurements.—Male, type, length of carapace 14.2 mm. (0.56 inch), width 10.4 mm. (0.41 inch), length of first ambulatory leg 35 mm. (1.39 inches), length of last leg, dactylus excluded, 17.3 mm. (0.68 inch) (Stimpson).

Range.—St. Thomas (Stimpson); Martinique, 10 to 20 fathoms (Aurivillius); St. Pierre, Martinique (Doflein); St. Lucia (A. Milne Edwards).

Material examined of Podochela macrodera

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
Bahamas:	° ′ ″	° ′ ″			°C						
Bahama Banks						May 15, 1893		State Univ. Iowa Exped.	1♂	Mus. S. U. I.	
Harbor Island						July 8, 1893		do.	1♂ 1♀	18670	
Clarence Harbor						July 15, 1903		B. A. Bean	4♂	31044	
Florida:											
Hawk Channel	1½ miles E. of Tea Table Key.		2.5	barry		Feb. 19, 1903	7466	*Fish Hawk*	1♂	47055	
Do.	1⅛ miles E. by S. of W. end of Lower Matacumba.		3	barry		Feb. 18, 1903	7464	do.	1♂ 1♀	47049	
Do.	1¼ miles S. by W. of SE. point of Long Key.		2.5	barry		do.	7463	do.	2♂	47054	
Do.	1¾ miles S. ¾ E. of Pigeon Key.		3	S. G.	23.5	Jan. 27, 1903	7426	do.	1 ovig. ♀	47053	
Key West						Dec., 1883		D. S. Jordan	1♂	6368	
Do.						Feb. 3, 1901		B. A. Bean and W. H. King.	2 ovig. ♀ 1 ♀	24848 47051	
Off Key West			(1)			June 26, 1893	46	State Univ. Iowa Exped.	2♀	Mus. S. U. I.	
Key West, inside the reef.	Key West Light to East Channel Bar Buoy, 71° 53′; to Beacon "A," 74° 46′.		5.25	Co. S. G.	20	Feb. 13, 1902	7278	*Fish Hawk*	1♂	47052	
Off Sand Key Light				In rocks, sponges, etc.		1893		State Univ. Iowa Exped.	1♂	Mus. S. U. I.	
Off Sand Key			50			May, 1913		J. B. Henderson.	1♀	46067	
West Florida			50					Wm. Stimpson	1	6317, M.C.Z.	Identified by A. Milne Edwards
Yucatan: Off Mujeres			12	crs. co. S.				do.	1	2955, M.C.Z.	
Cuba: Reef Lavesos Italienos.	Opposite Cayo Lavesos.		2–3	Co. S. R.		June 2, 1914	14	*Tomas Barrera* Exped.	1 ovig. ♀	54722	
Porto Rico:											
Off Vieques Island	Point Mula Lighthouse, S. SW. ⅜ W., 5¾ miles.		14	Co. S. Sh.	25.6	Feb. 8, 1899	6085	*Fish Hawk*	1♂	24118	
Off Culebra Island	Point Mula Lighthouse, SW. ½ S., 8½ miles.		14.75	Co. S.	25.5	do.	6086	do.	1♀	24116	

St. Thomas								*Albatross*	1♂	18078	
St. Martin: Groote Bai			0.5	sdy		Sept., 1905		J. Boeke	1 sm. ♂	Leiden Mus.	Soft shell.
St. Eustatius: West of Oranjestad.			4	sdy		Aug. 17, 1905		do	1♂	do	
Curaçao: Caracas Bay				Co		Apr. 7, 1920		C. J. van der Horst.	1♀	Amsterdam	

PODOCHELA GRACILIPES Stimpson

Plate 17

Podochela gracilipes Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 126 (type-localities, west of Tortugas, off Pacific and Carysfort Reefs, 36 to 60 fathoms; types not extant).—A. Milne Edwards, Crust. Rég. Mex., 1879, p. 192, pl. 35, figs. 1–1*b*.—Rathbun, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 50.

Diagnosis.—Rostrum long, spiniform, unarmed. Carapace much constricted behind orbits. Fingers widely gaping in adult male. Legs filiform.

Description.—A small species. Carapace narrow; a rounded protuberance on the cardiac region and two smaller median protuberances on the gastric region; two pterygostomian tubercles; a small tubercle at either end of epistome which, together with the projecting angles of the buccal cavity, is visible in dorsal view in large specimens. On the male sternum a thick blunt spine at base of cheliped. Basal antennal article long and narrow, posteriorly with two blunt margins which converge and unite anteriorly.

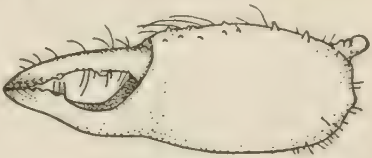

Fig. 12.—Podochela gracilipes, male (18089), left chela, × 6

Chelipeds stout in male; manus much inflated, fingers gaping to near the tips, more widely gaping than in any other Atlantic species; the fixed finger slightly bowed downward below the line of the manus; a large tooth near base of dactyl. Chelipeds slender in female. Ambulatory legs very slender; first pair much the longest, three times as long as carapace; dactyli long and almost straight, about one-third the length of the preceding segment; propodites of last three pairs thickened toward distal end, dactyli somewhat scythe-shaped; in second pair the dactylus is two-fifths as long as propodus, in third pair one-half, in last pair two-thirds as long as propodus.

Measurements.—Male (18079), length of carapace 12.7, width 8.7 mm.

Range.—Off Cape Lookout, North Carolina, to Gulf of Mexico, Caribbean Sea (to Colombia and Barbados), and Cape Frio, Brazil. Depth, 18 to 79 fathoms.

Material examined.—See table, pages 48-49.

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[1] Shallow

Material examined of Podochela gracilipes

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
North Carolina:	° ′ ″	° ′ ″			°F						
Off Cape Lookout	34 38 00	76 12 00	18	fne. gy. S.		Oct. 19, 1885	2607	*Albatross*	1♂	18896	
Do	34 35 30	75 45 30	32	wh. S. bk. Sp.		Oct. 18, 1885	2605	do	1♂	18895	
South Carolina: Off Cape Romain.	32 55 00	77 54 00	79	crs. S. bk. Sp.	59.1	Jan. 5, 1885	2311	do	1♂	18079	
Gulf of Mexico:											
South of Mobile Bay, Alabama.	29 24 30	88 01 00	35	yl. S. bk. Sp.		Mar. 4, 1885	2388	do	2♂ 4♀	18086	
Between Mississippi Delta and Cedar Keys, Florida.	29 27 30	87 48 30	30	crs. S. bk. Sp. Sh.		do	2390	do	3♂	18087	
Do	29 18 15	85 32 00	25	crs. gy. S. brk. Sh.		Feb. 7, 1885	2370	do	1♀	22291	
Do	29 15 30	85 29 30	27	G		do	2372	do	3♂	18084	
Do	29 14 00	85 29 15	25	Co		do	2373	do	1♂ 1♀	18085	
Do	28 45 00	85 02 00	30	gy. S. brk. Co.		Mar. 15, 1885	2405	do	2♂ 8♀ (2 ovig.)	18088	
Do	28 46 00	84 49 00	26	crs. S. Co.		do	2406	do	5♂ 3♀ (1 ovig.)	18089	
Do	28 47 30	84 37 00	24	Co. brk. Sh.		do	2407	do	1♂	18090	
Off Anclote River						1901		J. E. Benedict	1♂	54721	
Between Charlotte Harbor and Dry Tortugas, Florida.	26 19 00	83 22 00	31	S. G. bk. Sp.	67.5	Mar. 18, 1889	5107	*Grampus*	1 ovig. ♀	47061	
Do	26 18 30	83 08 45	27	fne. gy. S. bk. Sp. brk. Sh.		Mar. 19, 1885	2412	*Albatross*	3♂	18091	
Do	26 00 00	82 57 30	24	fne. S. bk. Sp. brk. Sh.		do	2413	do	2♀	18092	
Do	25 04 30	82 59 15	26	fne. wh. S. brk. Sh.		do	2414	do	2♂	18093	
Florida Keys:											
Strait of Florida	25 04 50	80 15 10	56	Co. S.		Apr. 9, 1886	2639	do	2♂	11408	
West of Dry Tortugas	24 44 00	83 26 00	37			1877–78	10	*Blake*	2	2887, M.C.Z.	
Off Key West	Sand Key Light bearing W. NW., Key West Light bearing N.		60			June 19, 1893	24	State Univ. Iowa Bahama Exped.	2♂ 2♀	In S. U. I.	
Do	Sand Key Light bearing NW. by N., Key West Light N. ½ E.		50–60			do	27	do	1♂	do	

Do	Sand Key Light bearing W. ½ N., about 6½ miles.		20			June 24, 1893	39	do	2♂	do	
Off Sombrero			54				(1)	*Bache*; W. Stimpson.		2954, M.C.Z.	
Yucatan Channel	22 18 00	87 04 00	24	wh. R. Co.		Jan. 30, 1885	2365	*Albatross*	1♂ 3♀	18082	
Do	22 08 30	86 49 00	26	wh. Co.		do	2360	do	1♂ 1♀	18080	
Do	22 07 30	87 06 00	21	wh. R. Co.		do	2363	do	1♀	18271	
Colombia: Gulf of Morrosquillo.	9 30 15	76 20 30	42	gn. M. S.		Mar. 23, 1884	2142	do	1♀	7789	
Barbados	Lazaretto bears SE. by E., ½ mile off shore.		35	rky		May 24, 1918	42	State Univ. Iowa Barbados-Antigua Exped.	1♂	Mus. S. U. I.	
Do	Cable station bears E. by S., Lazaretto E. SE. ½ S.		35-60	mostly rky., on steep slope.		June 3, 1918	75	do	1♂	do	
Do	Paynes Church, E. NE. and the Lazaretto, SE. by S., off shore ½ mile.		50	rky		May 31, 1918	64	do	1♀	do	Incorrectly identified as *P. hypoglypha*.
Brazil: Off Cape Frio			35					*Hassler*	1 ovig. ♀	1835, M.C.Z.	

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[1] 5th sounding.

PODOCHELA HEMPHILLII (Lockington)

Plate 18; plate 209, fig. 2

Microrhynchus hemphillii Lockington, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 30 [3] (type-locality, Bay of San Diego, 7 fathoms; type destroyed in San Francisco earthquake, 1906).

Inachoides (*Microrhynchus*) *hemphillii* Lockington, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 75 [13].

Inachodes hemphilli Streets and Kingsley, Bull. Essex Inst., vol. 9, 1877, p. 104.

Podochela tenuipes Rathbun, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 224 (type-locality, Catalina Harbor, Santa Catalina Island, California; type, Cat. No. 17505, U. S. N. M.). Identity with *P. hemphillii* determined by Dr. S. J. Holmes who examined the type of the latter.

Podochela hemphillii Rathbun, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 569; Harriman Alaska Exped., vol. 10, 1904, p. 171, pl. 10, fig. 2.—Holmes, Occas. Papers California Acad. Sci., vol. 7, 1900, p. 17.—Schmitt, Univ. California Publ. Zool., vol. 23, 1921, p. 195, text-fig. 120, and synonymy.

Diagnosis.—Rostrum acuminate or spinous. Postorbital lobe small or minute. Fingers of adult male widely gaping. First pair of ambulatory legs about three times length of carapace.

Description.—Carapace without prominent tubercles on dorsal surface; cardiac region low except in very large specimens; gastric region rounded, bearing five tufts of curved setae, two of which are on either side forming a rectangle and the fifth posterior and median; branchial regions flattened, having a longitudinal row of curved setae across its surface and a tuft of the same at the inner angle;

hepatic region tumid and bearing a spine or tubercle. Pterygostomian ridge having a similar tubercle at its middle. Rostrum thick, triangulate, longer than broad and varying considerably in length, acuminate, with two double rows of curved setae above. A small postorbital spine or tubercle. Segments of male sternum convex, deeply separated.

Basal antennal article narrow anteriorly; posteriorly it bears a thick, compressed protuberance nearer the inner than the outer margin. Chelipeds in adult male robust, pubescent; merus trihedral, curved, outer margin spiny; carpus with a supero-posterior spine; palm inflated and with several spiny projections, especially on lower edge; fingers shorter than palm, gaping in basal three-fifths. Chelipeds in female and young slender, hands semicylindrical, fingers nearly meeting. Legs long and slender, especially of first two pairs, long-hairy, hairs on upper surface curled; dactyli falciform, dentate, in the first pair about one-third the length, in the other pairs about half the length of the penultimate articles; these last have no thumb-processes but in the last two pairs are slightly thickened in distal half.

Color.—Plain pale brown (Hilton). Some formalin specimens are brown and white mixed.

Measurements.—Male (21862), length of carapace 24.1, width 16, length of first leg about 57.5 mm. Female (50614), length of carapace 18.2, width 13.3 mm.

Range.—From San Luis Obispo, California (Lockington), to Gulf of California. Depth, 1 to 47 fathoms.

Material examined.—See table, page 51.

PODOCHELA CURVIROSTRIS (A. Milne Edwards)

Plates 19 and 210

Anisonotus curvirostris A. Milne Edwards, Crust. Rég. Mex., 1879, p. 196, pl. 36, figs. 3–3*d* (type-localities, Barbados, 100 fathoms, and near Havana, 127 fathoms; cotypes in M. C. Z.).—A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 364, pl. 10, figs. 4 and 5, text-figs. 14 and 15.

Podochela spinifrons Rathbun, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 51 (type-locality, off Havana, 199 fathoms; holotype, Cat. No. 9510, U. S. N. M.).

Diagnosis.—Rostrum terminating in a long arched spine. Postorbital tooth well developed. Bases of legs ornamented with laminiform plates inclosing shallow cavities. Sternum of male formed of plates separated by deep grooves.

Description.—Carapace spinuliferous; an erect cardiac spine; gastric region with a spine directed forward and in front of it a spiny tubercle; rostrum long, sharp, arched, a median spiniferous crest; orbit with an erect crest bearing spinules and two slender spines;

Material examined of Podochela hemphillii

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°F						
California:											
Off Venice, Santa Monica Bay.						Aug. 8, 1913		*Anton Dohrn*	1 ovig. ♀	50225	From Venice Mar. Biol. Station.
Laguna Beach			12–15					W. A. Hilton	1♂ 3♀ (2 ovig.)	50613–50616	
Isthmus Harbor, Santa Catalina Island.						Jan. 1, 1913		*Anton Dohrn*	3♂ 1 ovig. ♀	50223	From Venice Mar. Biol. Station.
Catalina Harbor								W. H. Dall	11	17505	1♂ is holotype of *P. tenuipes.*
Do						Apr. 1, 1915		*Anton Dohrn*	1♂	50262	
Entrance to Catalina Harbor.						Dec. 30, 1912		do	4♂ 4♀ (1 ovig.)	50222, 50224	
San Diego Bay	32 40 42	117 08 48	*Meters* 2–3	gn. M.		June 18, 1909	1663	Scripps Inst.	1♂	Scripps Inst.	
Lower California (outer coast):			*Fathoms*								
Off Cerros Island	27 54 12	115 08 00	33	brk. Sh.		Sept. 1, 1908	1631	do	10♂ 7 ovig. ♀	do	
Magdalena Bay	24 38 00	112 05 30	17	fne. gy. S.	65	Apr. 9, 1889	3042	*Albatross*	1♀	17328	
Do	24 32 00	111 59 00	12	fne. gy. S.		May 2, 1888	2831	do	3♂ 4♀	21862	
Off Santa Margarita Island.	24 27 00	111 59 00	47	fne. yl. S.	68.5	Apr. 8, 1889	3039	do	2♂ 1♀	17327	
Off Point Marques	23 47 45	111 23 00	325	dk. gn. M. For.	44.1	Mar. 22, 1911	5679	do	1♂	55763	Depth excessive. Perhaps an error in station number.
Off Cape St. Lucas	22 52 00	109 55 00	31	rky.	74.1	May 1, 1888	2829	do	3♂	21861	
Gulf of California:											
East of La Paz	24 11 30	109 55 00	10	Sh.		Apr. 30, 1888	2828	do	1♀	21860	
Off San José Island	24 54 30	110 39 00	39	crs. S.	63.6	Mar. 16, 1889	2999	do	1♂	17326	
Do	24 55 15	110 39 00	33	fne. gy. S. brk. Sh.	64.5	do	3001	do	1♀	17329	
San Estaban Island						Apr. 14, 1911		do	1♂	Amer. Mus.	
Off Cape San Miguel	29 30 00	112 40 00	45					Lieut. H. E. Nichols, U.S.N.	1♀	18009	

antennal article largely visible from above, bearing a spine at anterior angle; an oblong postorbital lamina and behind and below it a flat triangular tooth; these two teeth correspond in position to the small tubercles present in *P. gracilipes* and other species. Hepatic region much dilated laterally and ventrally, its spine narrow, flattened, obtuse; a similar pterygostomian spine; buccal cavity conspicuously crested at anterior angle; basal antennal article with a cristiform inner margin and an angular ridge on posterior half. Sternal crests in male flat, tuberculate, separated by deep sulci; crests on coxae of legs similar to those of *P. lamelligera* but less prominent; anterior part of male sternum pubescent, two stout spines in front of abdomen, projecting downward and forward; first segment of abdomen bears a spiniform tubercle at distal end.

Chelipeds in both sexes slender, hirsute, spinuliferous; fingers in contact. Legs very hairy except slender, yellow, horny tips of dactyls; propodites slender, dactyls slightly curved.

Measurements.—Male (9510), length of carapace 22, width 15 mm.; female (6945), length 21, width 13.5 mm. Male (A. M. Edwards), length 29, width 16 mm.

Range.—Straits of Florida and Yucatan Channel to Barbados and Carriacou. Depth, 73 to 201 fathoms.

Material examined.—See table, page 53.

PODOCHELA LAMELLIGERA (Stimpson)

Plate 20, figs. 1 and 2

Podonema lamelligera STIMPSON, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 126 (type-locality, off Tennessee Reef, 21 fathoms; type not extant).

Podochela lamelligera A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 193.—RATHBUN, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 49.

Diagnosis.—Rostrum short, pointed. Postorbital tooth well developed. Bases of legs ornamented with laminiform plates enclosing cup-shaped cavities. Sternum of male formed by overlapping plates.

Description.—Cardiac region protuberant; gastric region with two small pointed tubercles, the posterior the more elevated. Rostrum triangular, rough above, tapering to a sharp point, hollow underneath. Orbits with erect, spinuliferous margins. Postorbital tooth triangular, laminiform. Farther back and lower down, at either extremity of epistome, there is a smaller tooth. Hepatic projection tipped with a slender spine. Angle of buccal cavity cristate. A large tooth in the middle of the pterygostomian crest. At the base of each cheliped two thin plates project downward and inward, and there are also two on the sternum at the extremity of the male abdomen. Sternal plates broad, thin, spinulous, their posterior margins turned downward and overlapping the next plate. Coxal segment of each

Material examined of Podochela curvirostris

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°*F*						
Off Havana, Cuba	23 10 40	82 20 30	201	Co		May 1, 1884	2167	*Albatross*	1 ovig. ♀	6915	
Do	23 10 39	82 20 21	199	Co		Jan. 19, 1885	2337	do	1♂	9510	Holotype of *P. spinifrons.*
Do			127			1877–78	65	*Blake*	1♂	3034, M.C.Z.	Cotype.
Off Arrowsmith Bank, Yucatan.	20 59 30	86 23 45	130	Co		Jan. 22, 1885	2354	*Albatross*	1♀	18094	
Off Montserrat			120			1879	157	*Blake*	1	3032, M.C.Z.	
Off Barbados	13 11 54	59 38 45	73	Co. S. Sh	70.75	Mar. 9, 1879	290	do	1	2890, M.C.Z.	
Do			100					*Hassler*		3031, M.C.Z.	Cotype.
Off Carriacou, Grenadines	12 28 22	61 32 18	163	S. Co	53	Feb. 24, 1879	241	*Blake*		3033, M.C.Z.	

Material examined of Podochela lamelligera

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.
	Latitude N.	Longitude W.								
	° ′ ″	° ′ ″			°*F*					
Gulf Stream, off Cape Florida	2¼ miles S. SE. of Fowey Rocks Light.		45	rky	70	Mar. 25, 1903	7511	*Fish Hawk*	1 ovig. ♀	47047.
Off Key West	24 25 45	81 46 45	45	Co	75	Jan. 15, 1885	2317	*Albatross*	1♂ 1♀	18076.
Do	Sand Key Light, W. NW.; Key West Light, N.		60			June 19, 1893	24	State Univ. Iowa Exped.	1♀	Mus. S. U. I.
Gulf of Mexico, south of Apalachicola	28 45 00	85 02 00	30	gy. S. brk. Co		Mar. 15, 1885	2405	*Albatross*	1♂	18077.

ambulatory leg furnished on the lower side with a cup-shaped expansion.

A small acute tooth projects forward from the antero-external angle of the basal antennal article; laminiform margins very prominent, especially the inner one, which is deepest at about its middle, at which point there is a transverse, bilobed crest on the article. Interantennular partition prolonged downward at middle in a sharp tooth.

Chelipeds of both sexes with palm not dilated and fingers almost meeting throughout their length. First pair of legs much longer than those following, merus rather stout; all the legs have a long propodus with a very slight thumb-process, and a little-curved dactylus.

Measurements.—Male (18076), length of carapace 18, width 12.5 mm. Female (18076), length 20, width 16, length of first leg 60 mm.

Range.—Florida, from Cape Florida through Straits of Florida to Gulf coast. Depth, 21 to 60 fathoms.

Material examined.—See table, page 53.

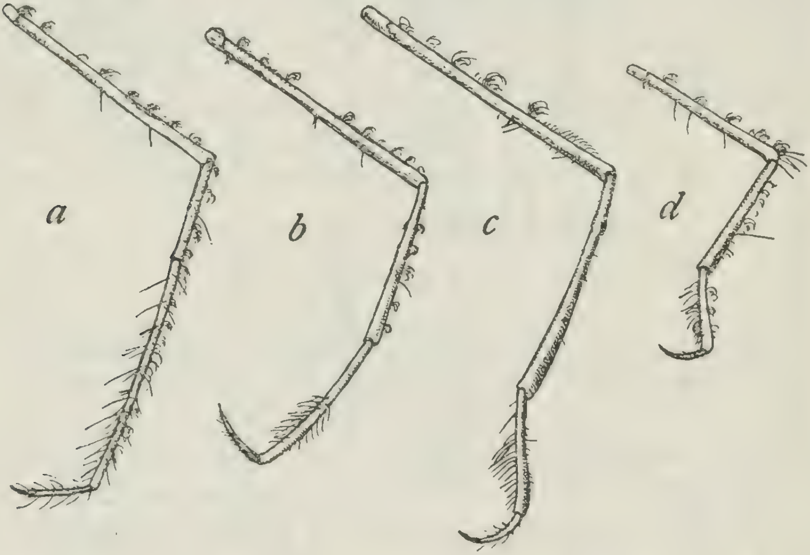

FIG. 13.—PODOCHELA BARBARENSIS, × 2. LEGS 1, 2, AND 4 ARE CAT. NO. 29955, U.S.N.M., AND MAY BE FROM DIFFERENT SPECIMENS; LEG 3 IS CAT. NO. 48256, U.S.N.M. *a*. FIRST LEG. *b*. SECOND LEG. *c*. THIRD LEG. *d*. FOURTH LEG

PODOCHELA BARBARENSIS Rathbun

Plate 20, figs. 3 and 4

Podochela barbarensis RATHBUN, Proc. U. S. Nat. Mus., vol. 64, art. 14, 1924, p. 1 (type-locality, off Brockway Point, Santa Rosa Island, California; 38–45 fathoms; station 4431, *Albatross;* 2 males, Cat. No. 48256, U.S.N.M.).

Diagnosis.—Rostrum a long spine. Antennae filiform. First leg very much longer than the others. Two median tubercles on first segment of abdomen.

Material examined of Podochela barbarensis

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°*F*						
California:											
Off Santa Rosa Island	Brockway Point, Santa Rosa Island, S. 35° W., 3.5 miles.		38–45			Apr. 15, 1901	4131	*Albatross*	2♂	18256	1 male is holotype.
Off Santa Catalina Island			50					H. N. Lowe	7♂ 3♀ (1 ovig.)	29955	
Mexico:											
W. of Los Coronados Islands.	32 23 42	119 06 00	50	crs. S. bk. M.		July 17, 1908	1556	Scripps Inst.	3♂ 4♀	Scripps Inst.	
Do	32 23 42	119 06 00	50	crs. S.		do	1555	do	2♂ 2♀	do	
Do	32 23 30	119 05 48	50	crs. S.		do	1552	do	1♂ 1♀	do	
Do	32 23 12	119 05 24	48	crs. S.		do	1551	do	1♂ 1♀ ovig.	do	

Description.—A hairy species. Cardiac region with a large conical elevation; two median gastric tubercles, the anterior the smaller; two blunt median tubercles on first segment of abdomen. A prominent strapshaped spine on hepatic region; a small, similar one on the pterygostomian ridge, and a still smaller postorbital spine; some spinules in front of the angles of the buccal cavity, a few of which are visible in dorsal view. Orbital arch finely spinulous. Rostrum a long, slender, gradually diminishing spine, varying from three-fifths, in the largest, to one-half, in the smallest, as long as the postrostral portion of the carapace. Antennae overreaching the rostrum, filiform, the movable articles of the peduncle as well as the flagellum unusually slender; the basal article has laminate anterior and outer margins, the latter spinulous.

Chelipeds moderately enlarged, spinulous, especially on and near the margins, and hairy, the hairs entangling mud, foraminifera, etc. A spine at outer distal end of merus; a stout, spinuliferous knob on outer surface of carpus; chela widest behind middle of palm, thence tapering to end of fingers; gape correspondingly narrow, one tooth on the dactyl at middle of gape may be somewhat enlarged. First ambulatory leg three times (in largest specimen) as long as carapace with rostrum; merus and propodus equal, nearly twice as long as carpus and three times as long as dactylus, which is very slender and slightly curved. Dactyli of remaining legs falcate. In the second leg the carpus and propodus are equal, nearly two-thirds as long as merus and two and a half times as long as dactylus. (See *Measurements.*)

The sternum is deeply grooved between segments, the tubercles in line with base of chelipeds are very large and flattened anteroposteriorly.

Measurements.—Male, holotype, length of carapace 23.8, length of rostrum 9, width of carapace 12.7 mm. The legs are nearly all detached and those measured belong to four different males:

Leg	*merus*	*carpus*	*propodus*	*dactylus*
1	23	12	23	7.4
2	11	7.5	7.5	3
3	16.2	13.2	7	4.2
4	7	7	4	3

Range.—Santa Barbara Islands, California; northern extremity of Mexico. Depth, 38 to 50 fathoms.

Material examined.—See table, page 55.

PODOCHELA LATIMANUS (Rathbun)

Plate 21

Ericerus latimanus RATHBUN, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 224 (type-locality, Gulf of California, 11 fathoms, station 3024, *Albatross;* holotype, Cat. No. 17324, U.S.N.M.).

Diagnosis.—Rostrum a long spine nearly equaling postrostral length of carapace. A postorbital tubercle present. Sternum almost smooth. Chelipeds dilated.

Description.—Male: Cardiac region elevated, conical; branchial regions swollen, a tubercle on their antero-lateral margin; gastric region with two median tubercles, the anterior the smaller; hepatic region not prominent, bearing a marginal tubercle; pterygostomian ridge with a tubercle; postorbital tubercle small, midway between orbit and buccal cavity. Rostrum a triangulate, acuminate spine nearly as long as the remainder of the carapace, posteriorly hollow beneath, anteriorly upturned. Orbital arch thickened. Basal antennal article partially visible from above, a tooth at its antero-external angle, from which a convex ridge extends backward and inward; flagellum visible at sides of rostrum. Surface of maxillipeds spinulous.

Inner surface of chelipeds spinulous; outer margin of merus irregularly lobed; a spine at distal end above and on inner side; carpus with a stout external, and also anterior, spine. Palm dilated, fingers gaping; in the gape there is a truncate and a spiniform tooth on the dactyl and a triangular tooth on the immovable finger. First pair of ambulatory legs about one and two-thirds, second pair one and one-third, times the total length of the carapace; fourth pair not so long as the carapace. Propodus slightly thickened distally, about one and two-thirds times the length of the dactylus in the first pair and one and a half times in the remaining pairs.

The sternum has very slight depressions between the segments, and two stout cylindrical spines tipped with a granule at the base of the chelipeds. A tubercle on first abdominal segment.

Measurements.—Male, holotype, length of carapace with rostrum 26, length of rostrum from anterior margin of orbit 12.3, width of carapace 12.3 mm.

Range.—Gulf of California, Mexico. To a depth of 11 fathoms.

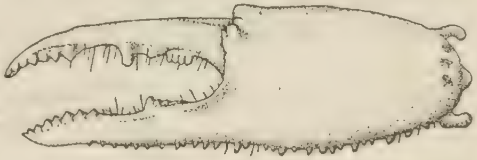

FIG. 14.—PODOCHELA LATIMANUS, MALE HOLOTYPE, LEFT CHELA, × 5.3

Material examined.—

Off Adair Bay, Mexico, in Gulf of California; lat. 31° 21′ 00″ N.; long. 113° 49′ 00″ W.; 11 fathoms; S. brk. Sh. G.; temp. 67° F.; Mar. 25, 1889; station 3024 *Albatross;* 1 male, holotype (17324).

Patos Island, Gulf of California; anchorage; 4½ fathoms; April 23, 1921; Fred Baker, California Academy Expedition; 2 males, 2 females (1 ovigerous) (Cal. Acad. Sci.).

Concepcion Bay, Lower California (gulf coast); March 19, 1889; *Albatross;* 1 male (17325).

PODOCHELA LOBIFRONS Rathbun

Plate 11, figs. 3 and 4

Podochela (*Coryrhynchus*) *lobifrons* RATHBUN, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 226 (type-locality, off Abreojos Point, Lower California, 58 fathoms; holotype, Cat. No. 17331, U. S. N. M.).

Diagnosis.—Postorbital and hepatic lobes large. Carpus of chelipeds rough with spinules single or clustered. Dactylus of first ambulatory leg very long, half as long as propodus.

Description.—Carapace covered with a short, dense pubescence; margins of lobes, of basal antennal article, of all ventral ridges, rough with sharp granules; chelipeds rougher than in other species, armed not only on the margins but elsewhere with spinules, largest on the upper and lower edges of the palm. The type and only specimen known is of large size and in a very soft-shelled condition. The front is very short and bilobed; in spite of the symmetry of the lobes, it is probable that the rostrum has been accidentally abbreviated, as the basal antennal article extends far beyond it and the antennular cavities are anteriorly incomplete. A deep sulcus surrounds the cardiac region except in front. Postorbital lobe large. The long thin hepatic lobe projects obliquely forward and slightly downward; close behind it shows in dorsal view the large pterygostomian lobe, and in front of it the obtuse angle of the buccal cavity.

Segments of sternum rounded and deeply separated; in front of the abdomen a rounded lobe on each side close to base of cheliped. Basal antennal article strongly angled, the extremity of the ridges accented.

Chelipeds stout, bordered by long straight hairs on lower edge of ischium and adjacent parts of merus, on upper edge of remainder of cheliped (hairs directed inward), on both edges of fingers and outer surface of dactylus. Some of the spinules are clustered on tubercles, as on the ischium, and the outer surface of the carpus. Distal two-fifths of fingers in contact, remainder gaping, leaving an oval interspace into the middle of which an enlarged tooth of the dactylus projects.

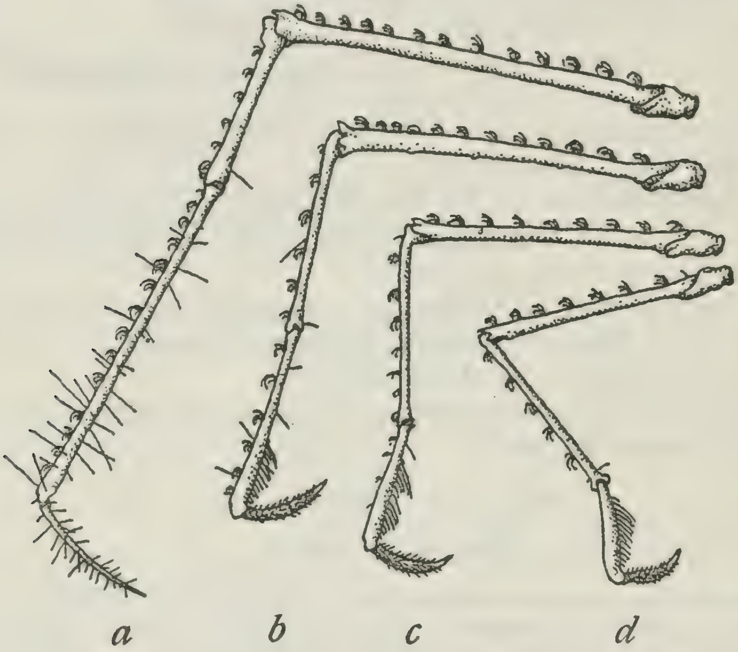

FIG. 15.—PODOCHELA LOBIFRONS, MALE HOLOTYPE, CARAPACE 20.5 MM. LONG. *a*. FIRST LEG. *b*. SECOND LEG. *c*. THIRD LEG. *d*. FOURTH LEG

Legs slender. First leg three times as long as the carapace, propodus twice as long as the slender and little curved dactylus; second two and a third times, third twice, and fourth one and three-fifths times, as long as carapace; second, third, and fourth dactyli equally curved, the second perceptibly longer; second propodus nearly three times as long as its dactylus, third and fourth propodites nearly one and three-fourths times their respective dactyli.

Measurements.—Male, holotype, length (perhaps incomplete) of carapace 20.5, width 18 mm.

Range.—Known only from off Abreojos Point, Lower California: lat. 26° 16′ 15″ N.; long. 113° 42′ 15″ W.; 58 fathoms; gy. S. brk. Sh.; temp. 56° F.; April 10, 1889; station 3044, *Albatross;* 1 male holotype (17331).

Genus INACHOIDES Milne Edwards and Lucas

Xiphus Eydoux and Souleyet, Voy. *Bonite*, atlas, 1842 (?), pl. 1, figs. 1–6; type, *Xiphus margaritifère* Eydoux and Souleyet.

Inachoides Milne Edwards and Lucas, d'Orbigny's Voy. l'Amér. Mérid., vol. 6, pt. 1, Crust., "1843," p. 4; type, *Inachoides microrhynchus* Milne Edwards and Lucas.—Eydoux and Souleyet, Voy. *Bonite*, vol. 1, pt. 2, 1842 (?), p. 219.[16]—Dana, Amer. Journ. Sci., ser. 2, vol. 11, 1851, p. 432; Crust. U. S. Expl. Exped., pt. 1, 1852, p. 83; pt. 2, 1853, p. 1421.—A. Milne Edwards, Crust. Rég. Mex., 1879, p. 198.

Carapace longer than broad; cardiac, branchial, and gastric regions swollen. A preorbital spine may be present or absent. Postorbital tooth present, small, and pointing outward. Rostrum short and simple, with triangular base, terminating in a spine. Basal antennal article with an antero-external tooth; flagellum exposed from its insertion. Merus of outer maxillipeds cut at the antero-internal angle for insertion of palpus; antero-external angle rounded. Abdomen of male with six segments, of female with five. Chelipeds of male enlarged; palms swollen. Ambulatory legs slender, of medium length, first pair longest; subprehensile, the propodal segments more or less enlarged distally; dactyli curved, folding against the propodi.

Restricted to America, on the west coast from Magdalena Bay, Lower California, Mexico, to Valparaiso, Chile, and on the east coast from the Gulf of Mexico (west coast of Florida) to Desterro, Brazil.

KEY TO THE SPECIES OF THE GENUS INACHOIDES

A¹. Carapace with tubercles and granules. Antennal spines incurved at tip. **microrhynchus**, p. 60.

A². Carapace nearly smooth dorsally except for a cardiac tubercle. Postorbital spine minute. Antennal spines divergent.................. **laevis**, p. 61.

Species on both sides of the continent: *laevis.*

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[16] This synonymy is arranged in the sequence vouched for by Eydoux and Souleyet (Voy. *Bonite*, vol. 1, pt. 2, 1842 (?), p. 219), who, however, omit dates. It is obvious that the dates here given can not all be correct.

INACHOIDES MICRORHYNCHUS Milne Edwards and Lucas

Plate 22, figs. 1 and 2

Xiphus margaritifère EYDOUX and SOULEYET, Voy. *Bonite*, atlas, 1842 (?) pl. 1, figs. 1–6 (type-locality, Cobija, Chile; type in Paris Mus.).

Inachoides microrhynchus MILNE EDWARDS and LUCAS, d'Orbigny's Voy. l'Amér. Mérid., vol. 6, pt. 1, Crust., 1843, p. 5; atlas, vol. 9, 1847, pl. 4, figs. 2–2*m* (type-locality, Chile; type in Paris Mus.).—NICOLET, in Gay, Hist. Chile, Zool., vol. 3, Crust., 1849, p. 126 (*micrornynchus*).—MIERS, Proc. Zool. Soc. London, 1881, p. 65.—RATHBUN, Proc. U. S. Nat. Mus., vol. 38, 1910, p. 533, pl. 36, fig. 1.

Inachoides inornatus A. MILNE EDWARDS, Journ. Mus. Godeffroy, vol. 4, 1873, p. 77 (type-locality, "les îles Viti;" [17] type in Mus. Godeffroy, Hamburg).—ORTMANN, Zool. Jahrb., Syst., vol. 7, 1893, p. 38.

Diagnosis.—Carapace tuberculate and granulate. Postorbital tooth with anterior margin transverse. Antennal spines incurved at tip. Chelipeds longer than ambulatory legs.

Description.—Cardiac region surmounted by a tubercle and perhaps a few granules, otherwise smooth. Gastric region with two median tubercles, the anterior of which is the largest of a transverse row of five; each of the terminal tubercles of this row has usually a tubercle in front of it. Branchial region with two irregular, longitudinal series of tubercles, one marginal, the other considerably higher and separated from the first and from the inner border by a smooth space. Hepatic region with marginal tubercles, a larger one at anterior angle. Rostrum triangular, longer than its width at base, acute, and with a shallow median sulcus in its posterior half. Orbital border elevated, granulate, surmounted by a tubercle or blunt tooth. Postorbital tooth triangular, its anterior border transverse or nearly so.

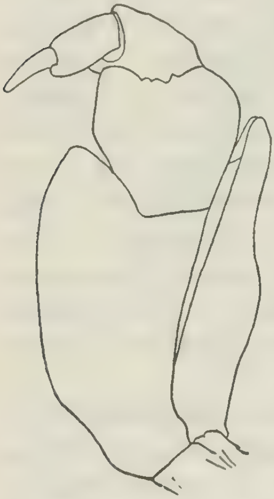

FIG. 16.—INACHOIDES MICRORHYNCHUS (18056), MAXILLIPED, × 17

Abdomen of both sexes medially carinate, a tubercle on the first segment in the old. Sternum of male sparsely granulate. Basal segment of antenna with two finely granulate crests meeting in an acute antero-external tooth visible at the sides of the rostrum. Maxillipeds granulate.

Chelipeds of male strong, about one and a half times length of carapace; palms swollen; fingers narrowly gaping except near the extremities; an enlarged tubercle near middle of fixed finger. Ambulatory legs shorter than the chelipeds in adult males; upper surface of propodites terminating in a rounded lobe, produced beyond the articulation of the falciform dactyli.

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[17] This locality is an error; it should be Valparaiso; see Ortmann, Zool. Jahrb., Syst., vol. 7, 1893, p. 38.

Color.—Bright bottle green (Edwards and Lucas).

Measurements.—Male (40463), length of carapace 17.7, width 14 mm. Male, type, length 30, width 21 mm. (Edwards and Lucas).

Range.—Peru and Chile, as far south as Valparaiso.

Material examined.—

Bay of Sechura, Peru; dredged about half way between Bayovar and Matacaballa; 5 to 6 fathoms; Apr. 10, 1907; R. E. Coker, collector; 2 males, 1 female (40463), received from Peruvian Government.

Paraca Bay, Peru; U. S. C. S. S. *Hassler;* 1 ovigerous female (2051, M. C. Z.).

Caldera, Chile; U. S. C. S. S. *Hassler;* 1 male, 1 ovigerous female (1837, M. C. Z.).

Valparaiso, Chile; U. S. C. S. S. *Hassler,* 1 male (1838, M. C. Z.); 2 females (18056), purchased from Henry A. Ward; 1 male (Copenhagen Mus.), obtained from Museum Godeffroy and labeled "*I. inornatus.*"

INACHOIDES LAEVIS Stimpson

Plate 22, figs. 3–6

Inachoides laevis Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 192 [64] (type-locality, Panama; cotype, Cat. No. 1247, M. C. Z.).—A. Milne Edwards, Crust. Rég. Mex., 1879, p. 200.

Inachoides forceps A. Milne Edwards, Crust. Rég. Mex., 1879, p. 199, pl. 33, figs. 4–4*d* (type-localities, Guiana, and Desterro, Brazil; types in Paris Mus.).

Inachoides obtusus A. Milne Edwards, Crust. Rég. Mex., 1879, p. 199, pl. 33, figs. 3–3*d* (type-locality, Guadeloupe; type in Paris Mus.).

Inachoides intermedius Rathbun, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 57 (type-locality, off Rio de Janeiro; holotype, Cat. No. 19942, U.S.N.M.); Bull. U. S. Fish. Comm., vol. 20, for 1900, pt. 2 (1901), p. 59.

Diagnosis.—Carapace nearly smooth. Postorbital spine minute. Antennal spines divergent. Immovable finger of male arched downward at its middle.

Description.—Body and appendages covered with a soft pubescence. Regions of carapace protuberant, rounded; cardiac region with a median tubercle; hepatic region produced to a submarginal, deflexed tubercle; a small tubercle on margin of branchial region, above base of cheliped; otherwise the regions are smooth. The rostrum has a triangular base and a styliform extremity as long as the base. Supraorbital arch furnished with a tubercle which may be acute or be altogether absent. Postorbital tooth or spine minute. On the infero-lateral regions, in front of the bases of the chelipeds, one or two branchial tubercles and one pterygostomian.

The basal segment of the antenna has on its margins two ridges which anteriorly converge, and at its external angle an oblique spine or tooth visible from above; the marginal ridges may be smooth to the naked eye or more or less denticulate or spinulous.

The maxillipeds have a longitudinal, denticulate ridge on the outer part of the ischium; antero-internal corner of merus projects sharply and obliquely forwards.

Chelipeds of male long and heavy in comparison to the body; merus subcylindrical; palm stouter, increasing distally, margins convex, surface sparingly spinulous, spinules arranged more or less in rows, especially along the margins of the inner surface; both fingers curved, a larger tooth at base of the fixed finger, which is strongly bent down in male, leaving a narrow, oval gape.

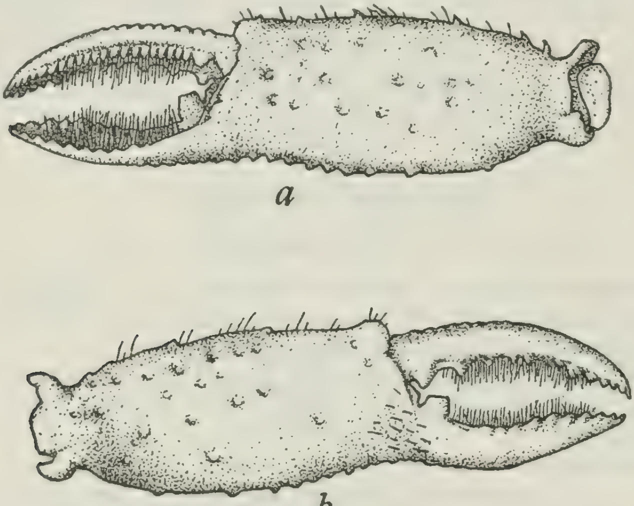

FIG. 17.—INACHOIDES LAEVIS, MALE (43023), RIGHT CHELA, 6.3 MM. LONG. *a*. INNER SIDE. *b*. OUTER SIDE.

The second, third, and fourth ambulatory legs are nearly the same length, the carpus and propodus are subequal to each other, and the dactylus falciform; first leg not much longer but slenderer, dactylus straighter.

Sternum of male with a large tubercle on either side in front of the abdomen.

Variations.—A most variable species. Differs in proportion of length to breadth of carapace, in length of rostrum, smoothness of carapace, in roughness of margins of basal article of antenna and size of tubercles on hand. See notes under "Material examined."

Measurements.—Male, cotype, length of carapace 10.7, width 8.2, length of cheliped 22.8 mm.

Range.—From west coast of Florida to Desterro, Brazil; from Magdalena Bay, Mexico, to Panama.

Material examined.—

Deadmans Bay section, Florida; *Fish Hawk;* lat. 29° 37′ 00″ N.; long. 83° 35′ 15″ W.; 3.5 fathoms; S. G.; temp. 15° C.; December 6, 1901; station 7206; 1 male, soft shell (47076).

Pepperfish Key section, Florida; *Fish Hawk;* lat. 29° 08′ 45″ N.; long. 83° 28′ 00″ W.; 6.25 fathoms; S. G.; temp. 16° C.; November 27, 1901; station 7170; 1 ovigerous female (47077). Antennal ridges denticulate.

North Key section, Florida; *Fish Hawk;* lat. 28° 54′ 00″ N.; long. 83° 30′ 30″ W.; 11 fathoms; R. Co. S.; temp. 17° C.; November 28, 1901; station 7185; 1 male (47078); antennal ridges granulate.

Off Northwest Channel, Florida; *Fish Hawk;* lat. 24° 44 ′50″ N.; long. 81° 55′ 50″ W.; 10.25 fathoms; hard, smooth; temp. 19° C.; February 24, 1902; station 7292; 1 ovigerous female (47079); no cardiac tubercle; antennal ridges distinctly denticulate.

Jamaica; 1910; E. A. Andrews; 1 male, 1 female (43023); nearest approach to *I. forceps*, pl. 33, fig. 4, cited.

Montego Bay; 1910; E. A. Andrews; 1 female (43022); antennal ridges faintly granulate.

Mayaguez, Porto Rico; Jan. 19 and 20, 1899; *Fish Hawk;* 2 males, 1 female (24185); small specimens; 3 large tubercles on hand, as in 24186; antennal ridges slightly rough.

Boqueron Bay, Porto Rico; Jan. 25 and 27, 1899; *Fish Hawk;* 3 males, 1 female (24186); largest male, depressed tubercles on cardiac and gastric regions, 3 large tubercles on hand; nearest approach to *I. obtusus*, pl. 33, figs. 3 and 3*d*, cited.

St. Thomas; 1915; C. R. Shoemaker collector; gift of Carnegie Institution: 1 male, from piles near town (50997), antennal ridges nearly smooth; 1 small female (55487); 1 ovigerous female (55488).

Rio de Janeiro, Brazil: Dredged; 1876–77; R. Rathbun; 1 female, holotype of *I. intermedius* (19942); antennal ridges slightly roughened. Thayer Exped.; received 1865; 1 male, 4 ovigerous females (1833, M. C. Z.). Rat Island, Rio de Janeiro; U. S. C. S. S. *Hassler;* 2 males, 3 ovigerous females (1834, M. C. Z.).

Lower California; Magdalena Bay; 1917; C. R. Orcutt; 1 female (50641); a sharp supraorbital tubercle; antennal ridges nearly smooth.

Panama: Rev. J. Rowell; 1 male, cotype of *I. laevis*, received from Smithsonian Institution (1247, M. C. Z.). May, 1869; Dr. Sternberg; 1 male (2044, M. C. Z.).

Genus ANASIMUS A. Milne Edwards

Anasimus A. Milne Edwards, Crust. Rég. Mex., 1880, p. 350; type, *A. fugax* A. Milne Edwards; Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 9.—Rathbun, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 58.

Carapace pyriform or ovate, very convex, armed with spines; rostrum simple, pointed, ascending. Eyes large. Postorbital spine usually prominent. Supraorbital spine present. Basal article of outer antenna long and narrow, terminating in a spine. Exognath of outer maxillipeds broad posteriorly, very narrow anteriorly; merus of endognath narrow at its base, deeply cut at its antero-internal angle for insertion of palpus, and strongly auriculate behind insertion. Sternum forming a considerable angle with the plane of the maxillipeds. Chelipeds of moderate length, the palms swollen in male; fingers long and slender, of nearly equal length and more than twice the length of carapace; dactyli long.

Inhabits the Atlantic coast of America from South Carolina to Cape Frio, Brazil.

KEY TO THE SPECIES OF THE GENUS ANASIMUS

A¹. Carapace much longer than broad.
  B¹. Three spines in longitudinal row on branchial region. Interantennular tooth well developed .... **fugax**, p. 64.
  B². Two spines in a longitudinal row on branchial region. Interantennular tooth shallow .... **latus**, young, p. 65.
A². Carapace nearly as broad as long, subcircular .... **latus**, old, p. 65.

ANASIMUS FUGAX A. Milne Edwards

Plate 23, figs. 5 and 6; plate 211

Anasimus fugax A. Milne Edwards, Crust. Rég. Mex., 1880, p. 350, pl. 31 *A*, figs. 1–1*d* (type-localities, near Santa Cruz, 115 fathoms, and near Barbados, 56 and 82 fathoms; cotype from Santa Cruz in Paris Mus.; 2 cotypes from Barbados in M. C. Z.); Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 9.—Rathbun, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 59 (part).—A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 366, text-fig. 16.

Diagnosis.—Carapace much longer than broad. A longitudinal series of three spines on branchial region. Interantennular tooth well developed.

Description.—Three erect median spines on carapace, one gastric, one cardiac of equal size, one intestinal, smaller. A spine on first article of abdomen. Protogastric lobes each armed with a spine, three spines or tubercles in a longitudinal series on branchial regions. Surface of carapace irregularly granulate, rostrum short and spinulous above. Supraorbital border armed with a spine. Basal article of antenna with a spine near its middle pointing obliquely downward and forward; flagellum long. Interantennular septum prolonged in a strong triangular tooth. Chelipeds of male feeble, clothed with stiff, distant hairs; merus armed with some small spines; fingers in contact throughout their length. Ambulatory legs cylindrical, smooth, first and second of equal length, third and fourth a little shorter; all have the dactylus and part of the propodus thinly fringed with hair. Sternum and abdomen granulate; a spine on first segment of abdomen; abdomen of female very wide.

Variations.—A Porto Rican male in the National Museum differs as follows from the type described above: Instead of an intestinal spine there is a very low tubercle; instead of three branchial spines there is only one, which is in the middle of the region; before and behind it there is a very low tubercle. Postorbital spine more slender than in the figured type. Besides the two spines on the anterior half of the basal article of the antenna, there is a third one behind the eye. The carpus and the outer margin of the merus of the chelipeds bear some good-sized spines; manus oval-globular, thicker than in Edwards's figure 1. The chelipeds of the type male are described as "*faibles*," but they are stout in the figure cited. The dactyl of the ambulatory leg is armed below with very small, sharp spinules, visible only with a strong lens.

Measurements.—Male, type, length of carapace 13, width 9, total width of animal with legs extended 75 mm. (A. M. E.). Male (24222) length 7.6, width 5.1 mm. Female cotype (2888), length 15, width 11 mm. Male cotype (2889), length 14.6, width 8.7 mm.

Range.—From Porto Rico to Cape Frio, Brazil. Depth 35 to 115 fathoms.

Material examined.—

Porto Rico: Mayaguez Harbor; Port del Algarrobo, E. by N. ½ N., 5¾ m.; 97 to 120 fathoms; Co.; temp. 24° C.; January 20, 1899; station 6076, *Fish Hawk*; 1 male (24222).

Off Barbados; March 9, 1897; *Blake:* Lat. 13° 13′ 55″ N.; long. 59° 38′ 50″ W.; 56 fathoms; Co. S. brk. Sh.; temp. 74.5° F.; station 292; 1 female cotype (2888, M. C. Z.). Lat. 13° 14′ 23″ N.; long. 59° 39′ 10″ W.; 81 fathoms; Co. S. brk. Sh.; temp. 64.5° F.; station 293; 1 male cotype (2889, M. C. Z.).

Off Cape Frio, Brazil; 35 fathoms; U. S. C. S. S. *Hassler;* 1 male (1836, M. C. Z.).

ANASIMUS LATUS Rathbun

Plate 214

Anasimus latus RATHBUN, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 58 (type locality, Gulf of Mexico, station 2378, *Albatross;* holotype, Cat. No. 9656, U. S. N. M.); Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 254, pl. 2, figs. 2–5.

Diagnosis.—Carapace nearly as broad as long in the old, narrower in the young. A longitudinal series of two spines or tubercles on branchial region. Interantennular tooth shallow.

Description.—Carapace broadly ovate, elevated on median line, posterior half semicircular, anterior half broadly triangular; surface covered with unequal granules; four median spines, two gastric, the posterior the larger, one large cardiac spine, one small, backward-pointing intestinal spine; also a long, acuminate spine directed backward at the distal end of the first abdominal segment; the anterior of the median gastric spines is one of a transverse row of five; in front of the end spines of this row are two longer and sharper; on the branchial region are three small spines or tubercles forming a triangle; three antero-lateral spines, one hepatic, and two branchial above base of cheliped. Rostrum short, broadly triangular at base, ending in a short, sharp, upturned spine, medially carinate. Supraorbital spines prominent, separated by a depression; postorbital spines long, exceeding eye in large specimens. Antenna short, exceeding rostrum but little; the basal article has, beside its terminal spine, a stout spine pointing downward and forward in front of eye; peduncle not attaining end of rostrum. The pterygostomian region has a row of spines and spinules continued to antennal segment and including a long spine at angle of buccal cavity. Sternum of male coarsely granulate; abdomen of female with a median tubercle on third and fourth segments.

Chelipeds of male a little more than twice length of carapace; ischium, merus and carpus granulate; merus cylindrical; palm swollen, shorter than fingers, and covered with fine scattered granules; digits slender, curved inward, gaping at base only, where there is an enlarged tooth on the dactyl. Chelipeds of female a little longer than carapace, much smaller than in male; fingers not gaping. Legs long, slender, cylindrical, roughened, except on the dactyls, with numerous short, stout, appressed spinules; propodi and dactyli with a double fringe of hair.

The young are narrower, rostrum and dorsal spines longer, postorbital spine very small and pointing directly outward, and in specimens 9 mm. long and less this spine is scarcely more than a tubercle.

Measurements.—Male, holotype, length of carapace 25.5, width 24, length of cheliped 58, of first leg 106 mm. Young male (18122), length of carapace 10.5, width 8.7 mm.

Range.—From South Carolina to Florida Keys and Gulf of Mexico; West of Trinidad. Depth, 26 to 88 fathoms.

Material examined.—See table page 67.

Material examined of Anasimus latus

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°F						
Off South Carolina	32 54 00	77 53 30	88	crs. S. bk. Sp.	57.8	Jan. 5, 1885	2312	*Albatross*	1♀ y	9437	
Off Miami, Florida			30			May, 1912		*Eolis*, J. B. Henderson.	1♀ y	17074	
Off Key West, Florida	24 25 45	81 46 00	45	Co.	75	Jan. 15, 1885	2318	*Albatross*	1♂ 2♀	18121	
Do	24 25 45	81 46 45	45	Co.	77	do	2317	do	2♂ 1♀ ovig.	18120	
Do	Sand Key Light bearing W.NW., Key West Light bearing N.		60			June 19, 1893	26	State Univ. Iowa Exped.	1♀ y	Mus. S. U. I.	
Do	Key West Light bearing NW. by N., Sand Key Light W. by N.		(1)			June 26, 1893	47	do	1 y	Mus. S. U. I.	
Off Sand Key, Florida	S. by E. from Sand Key Light.		61					*Eolis*, J. B. Henderson.	1♀ y	16738	
Southeast of Apalachicola, Florida.	28 46 00	84 49 00	26	crs. S. Co.		Mar. 15, 1885	2106	*Albatross*	1♂ y	18125	
South of Apalachicola, Florida.	28 45 00	85 02 00	30	gy. S. brk. Co.		do	2105	do	2♂ y	18124	
South of Cape San Blas, Florida.	28 44 00	85 16 00	60	gy. S.		do	2401	do	1♂ 1♀ y	18123	
South of Mobile Bay, Alabama.	29 24 30	88 01 00	35	yl. S. bk. Sp.		Mar. 4, 1885	2388	do	1♂ y 2♀ (1 y. 1 ovig.).	18122	
East of delta of Mississippi River.	29 14 30	88 09 30	68	gy. M.		Feb. 11, 1885	2378	do	3♂ 1♀ ovig.	9656	1 male is holotype.
West of Trinidad	10 37 40 to 10 37 00	61 42 40 to 61 44 22	31-34	dk. slate-col. M.	67-73	Feb. 3, 1884	2121-2	do	2♂ 2♀ ovig.	6904	

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[1] About 80 fathoms.

Genus ERILEPTUS Rathbun

Erileptus RATHBUN, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 226; type, *E. spinosus* Rathbun.

Carapace pyriform, convex, regions well defined; rostrum simple, slender; postorbital and supraorbital spines present. Sexes differing in shape of carapace, postorbital spine and cheliped. Basal article of antennae long and narrow, with spine at distal end. Antero-internal lobe of ischium of outer maxilliped large and strongly advanced; merus subtriangular, the anterior margin the longest; outer, or principal, margin of next article nearly as long as outer margin of merus and almost straight until near distal end where it forms an elbow; terminal article unusually long. Chelipeds of male extremely long. Ambulatory legs very slender, decreasing in length from first to fourth pair and in male much shorter than chelipeds.

Contains only one species.

ERILEPTUS SPINOSUS Rathbun

Plates 212 and 213

Erileptus spinosus RATHBUN, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 227 (type-locality, off San Diego, California, 36 fathoms, station 2934, *Albatross;* holotype, Cat. No. 17341, U.S.N.M.); Harriman Alaska Exped., vol. 10, 1904, p. 171, pl. 10, fig. 1.—HOLMES, Occas. Papers California Acad. Sci., vol. 7, 1900, p. 21.—WEYMOUTH, Stanford Univ. Publ., Univ. Ser., No. 4, 1910, p. 27, pl. 3, fig. 7.

Anasimus rostratus RATHBUN, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 227 (type-locality, NW. of Cerros Island, Lower California, 58 fathoms, station 2983, *Albatross;* (holotype, Cat. No. 17340, U.S.N.M.); Harriman Alaska Exped., vol. 10, 1904, p. 171, pl. 10, fig. 4.—WEYMOUTH, Stanford Univ. Publ., Univ. Ser., No. 4, 1910, p. 27.

Anasimus spinosus SCHMITT, Univ. California Publ. in Zool., vol. 23, 1921, p. 196, text-fig. 121.

Description.—Male: Carapace behind the rostrum equilaterally triangular, and spinous, as follows: Two median spines, one gastric, the other cardiac; one long branchial spine, with a small spine or spinule considerably in front of it and two or three small spines on the outer margin; a strong marginal hepatic spine; two very small spines arranged transversely on the gastric region, well in advance of the median spine; a slender spine on orbital arch. Rostrum slender, about one-half as long as postrostral portion of carapace, margins spinulous. Postorbital spine very small, sometimes tuberculiform, at some distance behind eye. A spine on first abdominal segment. Abdomen and sternum granulate, segments of sternum separated by deep grooves. Antero-external lobe of merus of maxillipeds bent strongly downward.

Chelipeds three or four times as long as carapace, slender, granulate; arm with a row of spinules along inner side and a spine at superior

Material examined of Erileptus spinosus

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
California:	° ′ ″	° ′ ″			°F						
Off Santa Rosa Island	S. by W. of Brockway Point.		38-45			Apr. 15, 1904	4431	*Albatross*	3♂ 1♀	46745	
Off San Nicolas Island			32-33	fne. gy. S.		Apr. 12, 1904	4420	do	1♀ ovig.	46744	
Entrance to Catalina Harbor, Santa Catalina Island.						Dec. 30, 1912		*Anton Dohrn*	4♂ 3♀ ovig.	50231 50232	From Venice Mar. Biol. Sta.
Isthmus Harbor, Santa Catalina Island.						Aug. 19, 1913		do	1♂	50394	Do.
Off Santa Catalina Island.			50					H. N. Lowe	2♂	29951	
Santa Catalina Island (probably).								W. H. Dall	1♂ 2♀	18059 18058	
Off La Jolla	32 50 00	117 18.3 00	30-39	R.		July 16, 1906	1287a	*Loma*	5♂	Scripps Inst.	
Off San Diego	Point Loma Lighthouse, N. 12° W., 6.1 miles.		21-24	gy. S. Co. G.		Mar. 1, 1904	4303	*Albatross*	1♂	46743	
Do.	32 33 30	117 16 00	36	gy. S.	58.2	Jan. 26, 1889	2934	do	2♂	17341	1 is holotype of *Erileptus spinosus*.
Lower California, Mexico:											
West of Los Coronados Islands.	32 23 30	119 05 48	50	crs. S.		July 17, 1908	1552	*Agassiz*	3♂	Scripps Inst.	
Do.	32 23 42	119 06 00	50	crs. S.		do	1555	do	1♂ 1♀	do	
Do.	32 23 42	119 06 00	50	crs. S. bk. M.		do	1556	do	5♂ 2♂	53957 Scripps Inst.	
Northwest of Cerros Island.	28 58 30	118 15 45	58	gy. S. brk. Sh.	55.8	Feb. 28, 1889	2983	*Albatross*	2♀	17340	1 is holotype of *Anasimus rostratus*.
Off Abreojos Point	26 14 00	113 13 00	48	yl. M.	53.9	May 3, 1888	2831	do	1♀ ovig.	54718	

distal end; hand slender, slightly compressed, increasing very little in width toward distal end; fingers from a third to a fourth as long as palm, arched, gaping narrowly in basal half. Legs much shorter than chelipeds, decreasing regularly in length from first to fourth; fourth leg a little more than half length of first; dactyls minutely spinulous.

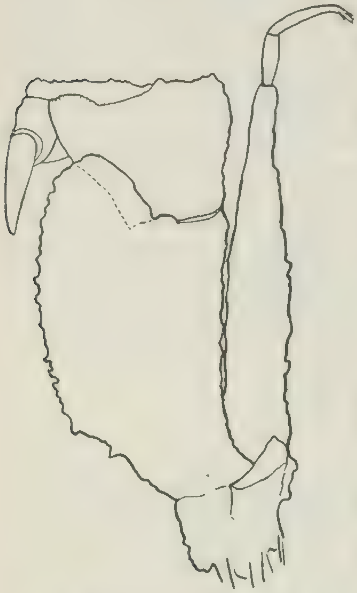

FIG. 18.—ERILEPTUS SPINOSUS, MALE (53957), MAXILLIPED, × 21.3

Female: Smaller than male and of very different shape, the carapace being broader anteriorly and narrower posteriorly; it lacks the long neck of the male, the postorbital spine is longer and not far behind the eye, the hepatic region is more prominent laterally and the branchial region less so. Rostrum shorter than in male, about one-fourth as long as postrostral portion of carapace. Abdomen densely granulate except in the depressions either side of the median elevation. Chelipeds one and a third times as long as carapace and shorter than the first pair of ambulatory legs; fingers nearly as long as palm.

Measurements.—Male (53957), length of carapace 11.5, width 7.8, length of cheliped 41 mm. Female (17340), length of carapace 7.5, width 5, length of cheliped 10 mm.

Range.—From Santa Rosa Island, California, to Abreojos Point, Lower California, Mexico. Depth, 21 to 58 fathoms.

Material examined.—See table, page 69.

Genus OREGONIA Dana

Oregonia DANA, Amer. Journ. Sci., ser. 2, vol. 11, 1851, pp. 270 and 431; type, *O. gracilis* Dana; U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 105; pt. 2, 1853, p. 1421.

Carapace subtriangular or suboblong, moderately convex and tuberculate; a large postorbital, but no preorbital spine; rostral spines slender. Antennae visible in dorsal view at sides of rostrum, basal article narrow. Merus of maxillipeds distally truncate, bearing the palpus at its antero-internal angle. Chelipeds in male much elongated, somewhat enlarged; palm long, compressed and distally widened. Ambulatory legs of moderate length, slender, and decreasing regularly in length. Abdomen composed of seven distinct segments.

Bering Sea and North Pacific Ocean. Shallow water to 764 fathoms.

KEY TO THE SPECIES OF THE GENUS OREGONIA

A¹. Rostral horns long, parallel, contiguous. Supraorbital arch prominently angled at posterior end. Body, including rostrum, subtriangular. **gracilis**, p. 71.

A². Rostral horns short, divergent. Supraorbital arch not prominent nor angled posteriorly. Body suboblong.......................... **bifurca**, p. 79.

OREGONIA GRACILIS Dana

DECORATOR CRAB

Plates 24 and 25

Oregonia gracilis DANA, Amer. Journ. Sci., ser. 2, vol. 11, 1851, p. 270 (type-locality, Puget Sound; cotype, Cat. No. 1232, M. C. Z.); U. S. Expl. Exped., vol. 13, Crust., part 1, 1852, p. 106; atlas, 1855, pl. 3, fig. 2*a–c*.—RATHBUN, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 59; Harriman Alaska Exped., vol. 10, 1904, p. 171.—DOFLEIN, S.B., K. Abh. Bayer. Akad. Wiss., math.-phys. Klasse, vol. 29, 1899, p. 183.—HOLMES, Occas. Papers California Acad. Sci., vol. 7, 1900, p. 19.—WAY, Puget Sd. Mar. Sta. Publ., vol. 1, 1917, p. 369, text-fig. 20.—SCHMITT, Univ. California Publ. Zool., vol. 23, 1921, p. 198, text-fig. 122.

Oregonia hirta DANA, Amer. Journ. Sci., ser. 2, vol. 11, 1851, p. 270 (type-locality, Puget Sound; type not extant); U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 107, pl. 3, fig. 3*a–b*.

Oregonia longimana SPENCE BATE, Proc. Zool. Soc. London, 1864, p. 663 (type-locality, Esquimalt Harbor, B. C.; type in Brit. Mus.); Lord's Naturalist in Brit. Columbia, vol. 2, 1866, p. 267, plate facing p. 262, fig. 5.

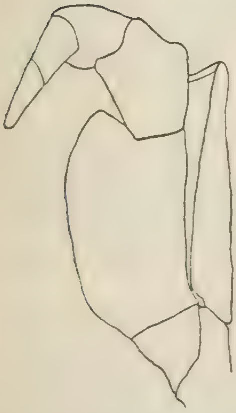

FIG. 19.—OREGONIA GRACILIS (17065), MAXILLIPED, × 4

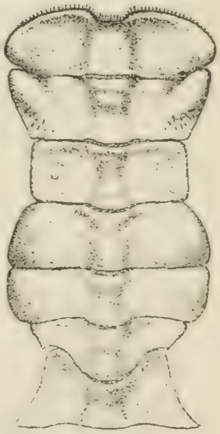

FIG. 20.—OREGONIA GRACILIS, MALE (14705), ABDOMEN, × 2.76

Diagnosis.—Rostral horns long, parallel, contiguous. Supraorbital arch prominently angled at posterior end. Body, including rostrum, subtriangular.

Description.—Surface covered with setae and bunches of longer hairs. Carapace unevenly tuberculate; cardiac region somewhat depressed; hepatic region with a tuberculate prominence below the margin. Postorbital spine remote from the eye, long, lanceolate, directed obliquely forward, and projecting laterally beyond the eye. Supraorbital border posteriorly dilated and terminating in a dentiform projection. Rostral horns contiguous, sometimes distally divergent, slightly arched, curving downward at the extremity, of variable length, often more than half the postfrontal portion of the carapace. Antennae long, often exceeding the rostrum.

Material examined of Oregonia gracilis

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°F						
Bering Sea (American waters):											
Cape Etolin, Nunivak Island			8	stony		1874		W. H. Dall	1♂ 12♀	14705	At anchorage.
Off Cape Newenham	58 34 15	162 22 00	21	fne. gy. S. G.	43	June 13, 1890	3248	*Albatross*	2 y	17359	
Do	58 27 30	162 36 00	13.5	fne. gy. S. bk. Sp.	37	do	3249	do	1	15958	
Bristol Bay	58 31 20	161 13 00	11.5	S. P.		June 9, 1890	3245	do	1	15957	
Do	58 38 30	159 33 30	14	bk. M.	47	June 8, 1890	3241	do	2	15956	
Do	58 27 00	157 52 00	5	gy. S.		June 2, 1890	3234	do	1	15952	
Do	58 23 45	157 42 45	7.25	S. P.	44.5	do	3233	do	3	15951	
Do	58 16 30	158 13 00	11	bk. S.		June 7, 1890	3235	do	3	15953	
Do	58 12 30	159 55 00	15	P.	42.2	July 20, 1890	3300	do	5	15989	
Do	58 11 00	158 05 30	14.75	G. S. Sh.	39	June 7, 1890	3236	do	6	15954	
Do	58 03 40	158 37 30	18	fne. gy. S.		do	3238	do	1	15955	
Do	58 02 30	161 13 45	28	fne. gy. S.		July 21, 1890	3304	do	1	15992	
Do	57 59 00	158 44 00	20	fne. gy. S. yl. Sp.	44	July 20, 1890	3299	do	3	15988	
Do	57 45 45	160 12 15	30	fne. gy. S.	40.2	July 21, 1890	3302	do	8	15990	
Do	57 38 00	159 07 30	26	gy. S.	41.5	July 19, 1890	3297	do	5	15987	
Do	57 30 00	159 33 00	30	fne. gy. S.	40	July 18, 1890	3293	do	5	15983	
Do	57 27 00	160 23 30	33	bk. S.	39.5	July 21, 1890	3303	do	3	15991	
Do	57 26 30	158 46 00	24	gy. S. bk. Sp.	43	July 19, 1890	3296	do	28	15986	
Do	57 16 45	159 03 30	30	bk. G.	41	July 18, 1890	3294	do	35	15984	
Do	57 14 30	158 26 30	11.5	fne. gy. S.		July 19, 1890	3295	do	1	15985	
Do	57 14 00	159 35 00	32	bk. S. G.		July 18, 1890	3292	do	46	15982	
Do	56 58 30	159 11 00	26	bk. S. G.	41.2	do	3291	do	65	15981	
Do	56 50 30	159 01 00	16	gy. S. G.		do	3290	do	4	15980	
Do	56 44 30	159 16 00	16	bk. S.		do	3289	do	13	15779	
Mouth of Bristol Bay	56 26 30	160 00 00	15	bk. G.	45.5	July 17, 1890	3288	do	8	15978	
Do	56 33 00	160 14 00	30	crs. bk. S.	42	do	3287	do	5	15977	
Do	56 39 30	160 29 00	37	fne. gy. S. Sh. G.	41.5	do	3286	do	11	15976	
Do	56 16 30	160 53 00	25	fne. G.	43	June 29, 1890	3284	do	13	15975	
Do	56 28 00	161 16 30	39	fne. gy. S.	40.3	do	3283	do	1	15974	
Do	56 14 00	161 41 15	36	gy. S. bk. Sp.		June 28, 1890	3281	do	17	15972	
Do	55 58 45	161 46 30	18	G. S. R.	43.2	do	3277	do	4	15968	
Do	56 30 45	161 50 15	53	fne. S. gn. M.	38.2	June 29, 1890	3282	do	3	15973	
Do	56 27 00	162 08 00	36	fne. gy. S.	41	June 28, 1890	3280	do	1	15971	
Do	56 12 30	162 13 00	47	fne. gy. S.	38.8	do	3278	do	25	15969	
Do	56 25 40	162 39 15	41	fne. gy. S.	37	do	3279	do	1	15970	

Off Pribilof Islands	56 28 00	169 28 00	54	bk. S. rky	39.8	Sept. 2, 1893	3552	do	1 ♂	18314	
Do	56 02 00	169 30 00	121	fne. gy. S. G	38.6	July 17, 1893	3500	do	8 y	18311	
Do	56 32 00	169 45 00	41	gy. S. St. gn. M.	39.9	do	3496	do	1 ♀	18617	
Do	57 12 30	169 51 00	27	Sh. bk. S	40.1	Aug. 1, 1893	3510	do	1 ♀	18312	
Do	56 58 00	170 09 00	25	S. dk. Sp. rky	42.9	Sept. 3, 1893	3558	do	1 ♂ 2 ♀	18316	
Do	57 04 00	170 21 00	26	S. bk. Sp	45	Sept. 2, 1893	3557	do	1 ♀	18315	
Do	57 07 30	170 28 15	33	G	38.7	July 18, 1896	3638	do	1 ♂	20148	
Do	56 32 00	172 40 00	81	gn. M. S	37.1	Aug. 10, 1895	3602	do	4	19312	
St. George Island								G. D. Hanna, Bur. Fisheries	1 ♀ ovig	48285	
Do	2 miles off shore		40			Sept. 11, 1913		do	1 ♀ ovig.	48286	
Do						July 18, 1914		do	1 ♂	48288	
Do						May 29, 1918		C. E. Crampton	1 ♀ ovig	53618	In stomach of fish
St. Paul Island						July 10, 1914		Bur. Fisheries	1 ♂	48833	
Aleutian Islands and Gulf of Alaska:											
Attu Island			(1)			June, 1906		*Albatross*	1 ♂, soft shell	46511	
		Long. E.									
Off Attu Island	52 55 40	173 26 00	135	crs. P		June 11, 1906	4781	do	25 ♂ 11 ♀ (1 ovig.)	46503	
Kiska Harbor, Rat Islands.			7–14	M. S		1873		W. H. Dall	5 ♂ 16 ♀ 1 y	14707	
Petrel Bank	52 12 00	179 52 00	43	fne. bk. G		June 5, 1906	4778	*Albatross*	9 ♂ 3 ♀ (2 ovig.)	46502	
Do	52 11 00	179 49 00	52	fne. G		do	4777	do	14 ♂ 13 ♀ (9 ovig.)	46501	
		Long. W.									
Do	52 11 00	179 57 00	54	brk. Sh. P. S		do	4779	do	5 ♂ 4 ♀ (3 ovig.)	46500	
Bay of Islands, Adak Island.			9–16	M. S				W. H. Dall	1 ♀ 2 y	14710	
Nazan Bay, Atka Island.			10–16	S		1873		do	1 y	14770	
Off Unalaska	53 26 00	167 31 10	51	fne. bk. S	42	Aug. 19, 1890	3323	*Albatross*	1	15996	
Do	53 40 30	167 30 00	59	bk. S	40.8	Aug. 18, 1890	3319	do	5	15993	
Do	53 28 45	167 23 50	35	bk. S	42.4	do	3322	do	3	15995	
Do	53 33 30	167 15 40	54	dk. M	41.5	do	3321	do	3	15994	
Off Imagnee Pinnacle, Unalaska.			8–20					W. H. Dall	1 ♂	12540	
Port Levashef, Unalaska.								do	1 ♀	14713	
Dutch Harbor, Amaknak Island.								Harriman Alaska Exped.			
North of Akutan Island	55 00 00	166 10 00	78	fne. bk. S	40.1	Sept. 1, 1893	3549	*Albatross*	1 ♀	18313	
Do	54 15 00	166 03 00	72	P	41	July 23, 1888	2842	do	20	15553	
South of Akutan Island	53 56 00	165 56 00	45	brk. Sh. P	43.5	July 28, 1888	2843	do	2 ♂ 2 ♀ 26 y	15556	
Do	53 56 00	165 40 00	54	gy. S	42	do	2844	do	1 ♀	15561	
North of Unimak Pass	54 42 50	165 37 00	121	bk. S. G	38.7	May 22, 1890	3224	do	1	15950	
Do	54 49 00	165 32 00	81	gy. S. G	39	June 24, 1890	3257	do	1	15959	
Unimak Pass	54 26 15	165 32 00	56	bk. P	39	May 22, 1890	3223	do	4	15949	
Do	54 20 00	165 30 00	50	bk. S. P. Sh	39.7	do	3222	do	30	15948	
Do	54 15 00	165 06 00	34	G. brk. Sh		do	3220	do	10	15947	
North of Unimak Island	54 40 50	165 05 00	41	bk. S. G	40.6	June 24, 1890	3259	do	1	15960	
Do	55 04 00	165 04 00	61	bk. M	39.5	do	3263	do	2	15962	

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[1] Shore.

Material examined of Oregonia gracilis—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
Aleutian Islands and Gulf of Alaska—Continued.	° ′ ″	° ′ ″			°F						
North of Unimak Island	54 49 30	165 02 00	43	bk. S. R.	40.7	June 24, 1890	3262	*Albatross*	25	15961	
South of Unimak Island.	54 14 00	164 35 00	59	bk. S. G.	38	May 22, 1890	3219	do.	5	15946	
Do.	54 14 40	163 24 00	43	G.	38.5	May 21, 1890	3215	do.	1	15944	
Do.	54 13 00	163 06 00	38	gy. S. G.		do.	3214	do.	5	15945	
South of Sannak Islands	54 10 00	162 57 30	41	bk. S.		May 21, 1890	3213	do.	86	15943	
Do.	54 05 30	162 54 00	49	gy. S. bk. Sp.	38	do.	3212	do.	1	15942	
Do.	54 08 00	162 44 00	44	G.	42	July 30, 1888	2846	do.	1 y.	17354	
North of Alaska Peninsula	55 23 30	163 29 00	32	bk. S.	41	June 25, 1890	3267	do.	11	15963	
Do.	55 31 40	163 07 00	31	bk. & rd. S.	42	June 27, 1890	3272	do.	7	15965	
Do.	55 26 30	162 52 00	16	bk. S.	43.5	June 26, 1890	3270	do.	1	15964	
Do.	55 34 30	162 31 45	19	bk. S. Sh.		June 27, 1890	3274	do.	9	15966	
Do.	55 44 20	162 17 30	22	fne. bk. S.	42.8	do.	3275	do.	1	15967	
Belkofski Bay			15–25	Sh. G.		1880		W. H. Dall	2♂ 2♀	12496	
Off Round Island, Coal Harbor, Unga.			8–9	S. St.				do.	3♂ 3♀	14703	
Popof Strait, Shumagins			(2)			July 5, 1872		W. G. Hall	1♀	14769	
Sanborn Harbor, Nagai.						1872		W. H. Dall	1♂	14702	
Big Koniuji Island, anchorage.			6–20	S. R.		1874		do.	1♀	14709	
Off the Shumagins	55 16 00	160 28 00	69	gn. M.	43	Aug. 2, 1888	2849	*Albatross*	1 y.	17355	
Do.	54 55 00	159 52 00	35	gy. S. brk. Sh.	44.8	Aug. 4, 1888	2851	do.	3	15563	
Do.	54 42 00	159 46 00	21	brk. Sh.	48.2	do.	2850	do.	33	15939	
Port Möller			15	S.				W. H. Dall	1♂	14708	
Semidi Islands			12–28	G.		1874		do.	1 y.	13132	
Shelikof Strait	Cape Uyak, S. 51° W., 8.5 miles.		65–48	bu. M. S. G.		Aug. 15, 1903	4291	*Albatross*	1♂ 3♀	31537	
Alitak Bay, Kodiak Island.	Cape Alitak, S. 71° W., 4.8 miles.		27–29	dk. gy. M.		Aug. 6, 1903	4278	do.	1♂ 3♀	31536	
Do.	Cape Alitak, S. 41° W., 7.1 miles.		36–41	gn. M. fne. S.		do.	4273	do.	2♂ 1♀	31535	
Uyak Bay, Kodiak Island.	S. end Harvester Island, S. 38° W., 1.5 miles.		99	sft. gy. M., fne. bk. S.		Aug. 14, 1903	4290	do.	1 y.	31652	
Kodiak						Aug. 14, 1888		do.	3♂ 6♀	15554	
Shahafka Cove, Kodiak Island.			12–14	M. S.				W. H. Dall	5♂ y. 5♀ y.	14706	
Do.			15–20	G.				do.	2♂ 5♀	12501	

Woody Island, Kodiak Island.			(³)			Sept. 21, 1920		G. D. Hanna	1♂ y. 3♀	Cal. Acad.	
Chiniak Bay, Kodiak Island.								W. H. Dall	1♂ 1♀	12195	
Afognak Bay, Afognak Island.			14-19					*Albatross*	2♂ 1♀	31533	
Do			11-19					do	1♂ 1♀	31534	
Portlock Bank	58 07 00	151 36 00	68	gy. Sh. bk. Sp.	44	Aug. 22, 1888	2856	do	6♂ 2♀ 3y.	15558	
Do	58 05 00	150 46 00	51	brk. Sh. gy. S.	44.6	do	2857	do	2	15940	
Kachemak Bay, Cook Inlet.			20-60	sdy. M				W. H. Dall	1♀	14711	
Port Etches			5-18					do	2♂ 1♀ 1 y.	14701	
West side of Middleton Island.			10-12	G. S		1874		do	8 y	14768	
Southeastern Alaska:											
Lituya Bay			6-9					W. H. Dall	4♂ 1♀	14712	
Granite Cove, Port Althorp.								do	1♂	12517	
Juneau								Harriman Alaska Exped.			
Dundas Bay, Icy Strait	Point Wimbleton, S. 46° W., 0.1 mile.		78-21	gy. S. brk. Sh. R.	44.7	July 21, 1903	4259	*Albatross*	1♂	31651	
Do	Point Wimbleton, S. 25° W., 0.2 mile.		21-8.5	crs. S. R	44.2	do	4260	do	1♂	31532	
Stephens Passage	Thistle Ledge, N. 53° E., 1.7 miles.		188-131	R. brk. Sh	40.9	July 14, 1903	4253	do	1♂ 5♀	31531	
Freshwater Bay						June 20, 1903		do	1♂	31540	
Killisnoo								do	7	21760	In stomach of halibut.
Sitka Harbor			15	G. M		1874		W. H. Dall	1 y	14771	
Sitka								do	1♂	14714	
Do								Harriman Alaska Exped.			
Sumner Strait	Point Amelius, S. 80° W., 5.8 miles.		212-169	bu. M	44.2	Aug. 24, 1903	4302	*Albatross*	1♂ 3♀	31538	
Kasaan Bay, Prince of Wales Island.	Center of Round Island, S. 10° W., 0.4 mile.		95-98	dk. gn. M. S. Sh. R.	48.9	July 11, 1903	4245	do	1♂	31529	
Do	E. end Long Island, N. 78° W., 1.1 miles.		95-114	gn. M. fne. S. brk. Sh.		do	4247	do	2♂ 1♀	31530	
Yes Bay						Aug. 25, 1905		do	1♀ ovig.	46490	
Hunters Bay, Prince of Wales Island.						June 19, 1897		do	1♂	46538	
Metlakatla, Annette Island.						June 10, 1897		do	1♀	21761	
Cordova						June 20, 1914		do	1♀ ovig.	48839	With hook and line.

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[2] Low water.

[3] Low tide.

Material examined of Oregonia gracilis—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
British Columbia:	° ′ ″	° ′ ″			° *F*						
Queen Charlotte Sound	Center of Round Island, N. 22° W., 1.5 miles.		25–30	vol. S. G. brk. Sh. sponge.	49. 1	June 25, 1903	4203	*Albatross*	1♂	31649	
Do	Center of Round Island, N. 79° W., 1.6 miles.		69–51	gn. M. vol. S. G.	47. 6	do	4204	do	1♂	31523	
Fort Rupert, Vancouver Island.			(4)	R. Seaweed, Kelp.				Harlan I. Smith	1♀ y	22587	
Menzies Bay, Discovery Passage.			6	soft		July 31, and Aug. 1, 1881		U. S. C. S. S. *Hassler*, H. E. Nichols.	5♂ 3♀	5778	
Comox			(5)			July 6, 1915		W. Spreadborough.	4♂ 7♀ ovig	(6)	
Strait of Georgia	48 58 00	123 10 00	67	fne. S. brk. Sh.	48. 5	Sept. 5, 1888	2863	*Albatross*	2♂ 1♀	15562	
West of Vancouver Island.	49 00 00	125 48 00	24	gy. S	52. 3	Sept. 26, 1888	2881	do	2♂ 3♀ 10 y	15560	
Do	48 53 00	125 53 00	34	R	50. 3	do	2880	do	1♂ 2♀	15557	
Do	48 53 00	125 53 00	34	R	50. 3	do	2879	do	1 y	17358	
Strait of Fuca, south shore of Vancouver Island.	48 31 15	124 43 15	136	gy. S	44. 2	Sept. 1, 1891	3456	do	1 y	18310	
Do	48 29 40	124 40 10	135	gy. S. G		Aug. 28, 1891	3449	do	6 y	17059	
Do	48 24 20	124 24 40	123	gy. S. P	44. 5	Sept. 2, 1891	3459	do	2	17060	
Do	48 25 05	124 10 00	53	gy. S	46. 8	do	3460	do	9 1	17061 23943	
Do	48 16 00	123 45 05	100	rky	44	Aug. 27, 1891	3445	do	1♂ y	18309	
Do	48 15 00	123 35 50	92	dk. S. rky	44. 8	Sept. 3, 1891	3462	do	3	17062	
Do	48 16 30	123 29 40	80	gn. M. P	45	Aug. 27, 1891	3444	do	1 y	18308	
Do	48 18 30	123 22 00	56	gy. S. Sh. rky.	48. 5	Sept. 4, 1891	3466	do	5	17066	
Do	48 21 00	123 14 00	48	rky	49. 9	do	3465	do	10	17065	
Washington:											
Flattery Bank	48 21 45	124 50 30	77	gn. M. S	45	May 14, 1897	3673	do	2 y 2 y	21759 26369	
Do	48 17 00	124 52 00	38	gy. S	38	Sept. 24, 1888	2872	do	1 y	18616	
Strait of Fuca	48 09 30	123 23 30	45	gy. S	47. 8	Sept. 4, 1891	3463	do	1	17063	
Do	48 14 00	123 20 40	40	gy. S. P	47. 8	do	3464	do	2	23944	
Do	48 13 30	123 11 20	97	gn. M. P	46	Aug. 27, 1891	3443	do	7 y	17058	
Washington Sound	48 22 00	122 51 00	48	M. brk. Sh. S.	48	Sept. 6, 1888	2864	do	1♀ 3 y	17356	
Puget Sound	48 15 00	123 00 00	67	crs. bk. S	67	Apr. 30, 1894	3597	do	3 y	18957	
Do	48 11 30	122 48 00	37	rky	37	do	3593	do	2 y	18956	

Do								U. S. Expl. Exped.	1♂	1232, M.C.Z.	Cotype.
Simeahmoo, Puget Sound.								Dr. C. B. R. Kennerly, N. W. Boundary Survey.	1♂ 2♀	1223, M.C.Z. 1231, M.C.Z.	
Kilisut Harbor								*Albatross*	2♂ 3♀	31539	
Port Townsend Bay	Kala Point, N. 4.1° W., 1.1 miles.		14–17	sft. gn. M. br. Co.	50.8	July 1, 1903	4214	do	1♂	31525	
Port Townsend					----	Aug. 15, 1889		do	2♂ 4♀ 4 y	15555	
Admiralty Inlet	48 12 00	122 49 00	40	P	51.7	Sept. 6, 1888	2865	do	2♀ 5 y	15564	
Do	Admiralty Head Lt., N. 38° W., 1.3 miles.		26–15	R. Sh	50.8	June 29, 1903	4205	do	1♀	31650	
Do	Admiralty Head Lt., N. 88° W., 1.4 miles.		19–25	crs. gy. S. brk. Sh.	51	June 30, 1903	4212	do	2♂ 3♀	31524	
Do	Olele Point, Oak Bay, S. 27° E., 1.5 miles.		16–26	gn. M. S. brk. Sh.	51.8	July 1, 1903	4219	do	2♂ 1♀	31526	
Do	Olele Point, Oak Bay, S. 20° E., 0.8 mile.		16 31	do	50.8	do	4220	do	6♂ 5♀	31527	
Do	Olele Point, Oak Bay, S. 61° W., 1.4 miles.		39	gy. S. brk. Sh.	50.8	do	4222	do	4♂ 3♀	31528	
Port Orchard						July, 1889		O. B. Johnson	4♂ 3♀	14971	
Oregon:											
Off Columbia River	46 09 00	124 22 30	68	gy. S	45.8	Oct. 13, 1888	2882	*Albatross*	1♀	15559	
Heceta Bank	43 58 00	124 57 00	42	Co. P	47.1	Oct. 19, 1888	2887	do	1	15566	
California: West of Golden Gate.			39–41					do	1	52647	
Bering Sea (Siberian waters):		*Long. E.*									
Off Copper Island	54 51 30	167 14 00	54	gn. S		June 14, 1906	4786	*Albatross*	1♀ y	46657	
Do	54 50 24	167 13 00	57–56	gn. S		do	4788	do	2♂ 1♀	46504	
Do	54 49 45	167 12 30	56	gn. S		do	4789	do	2♂ 1♀	46505	
Off Bering Island	54 38 45	167 11 45	64	P		do	4790	do	2♀ (1 ovig.)	46506	
Do	54 36 15	166 58 15	76–72	rky		do	4791	do	2♂ 1♀	46507	
Do	54 36 15	166 57 15	72	P		do	4792	do	1♂ 1♀ ovig	46508	
Bering Island						1882–3		L. Stejneger	9 y	13510	
Do						1884		N. Grebnitski	5♂ 1♀	14716	
Do						1890		do	1♂ 6♀	18951	
Japan:											
Off Simushir Island, Kurile Islands.	46 46 40	151 41 00	107	crs. bk. S. P	35.4	July 16, 1906	4801	*Albatross*	1♂ 10♀ (7 ovig.)	46509	
Yezo Strait	44 04 00	145 32 00	86	dk. S. G	43.7	Sept. 30, 1906	5031	do	1♀	46512	
Sea of Japan	45 33 40	140 54 00	86	bk. S. P	43.4	Sept. 22, 1906	4995	do	1♀ y	46660	
Do	45 27 50	140 54 00	190	br. M. fne. bk. S.	34	do	4994	do	2♂	46659	
Do	43 19 20	140 17 00	59	rky	44.8	Sept. 20, 1906	4987	do	1♀ y	46658	
Otaru, Hokkaido								M. Sasaki	2♂	54515	
South coast of Hokkaido.	42 16 30	142 04 00	140	br. M. fne. bk. S. Co. S.	41.1	Oct. 3, 1906	5041	*Albatross*	1♂	46513	

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[4] Between high and low tide.

[5] Dredged.

[6] Victoria Memorial Museum.

Material examined of Oregonia gracilis—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude E.									
Japan—Continued.	° ′ ″	° ′ ″									
Hakodate, Hokkaido								Imper. Univ. Tokio.	1♀ ovig 1♀ ovig	45867 45876	
Do								M. Sasaki	1♂ 1♀	54514	
Tsugaru Strait	41 36 12	140 36 00	44	Sh. crs. G.		July 16, 1906	4807	*Albatross*	3♂ 9♀ (8 ovig.)	46647	
Do	41 35 50	140 36 45	47	S. Sh. crs. G.		do	4808	do	4♂ 1♀ ovig	46648	
Southwest of Tsugaru Strait.	41 18 00	140 08 00	207	gy. S. P. brk. Sh.		do	4809	do	1♀	46510	
Off Kinka San Lt., Honshu Island.	Kinka San Lt., N. 49° W., 5.9 miles.		78	bk. S.		June 5, 1900	3773	do	1♂	46656	
Do	38 12 50	141 49 15	107	dk. gy. S. brk. Sh. P.		Oct. 10, 1906	5047	do	1♂ 1♀ y	46661	
Do	38 09 24	141 52 30	129	dk. gy. S. brk. Sh.		do	5048	do	1♀ y	46514	

Material examined of Oregonia bifurca

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″									
Bowers Bank, Bering Sea	54 33 30	178 44 00	584	gn. M. bk. Sp. For.		June 4, 1906	4775	*Albatross*	1♀	43828	
Do	54 30 30	179 14 00	344-372	gn.-br. S.		do	4772	do	15♂ 23♀ (11 ovig.)	46189	
Do	54 30 00	179 17 00	426	brk. Sh.		do	4771	do	22♂ 19♀ (8 ovig.)	46488	
Do	54 20 30[1]	179 09 30[1]	764	gn.-br. M. fne. bk. S.		June 3, 1906	4768	do	1♀	43829	
North of Rat Islands	Rat Islands, Aleutians, S., 150 m.		270	gy. S. brk. Sh.		June 27, 1900	3785	do	1♀	25287	Holotype.

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[1] Approximate.

Chelipeds longer than the legs, the merus, carpus and upper margin of manus tuberculate. Fingers in adult male two-thirds to three-fourths as long as upper margin of palm, gaping in basal half, deflexed, lower margin of propodal finger convex; dactylus with a large tooth in the gape, fixed finger with a smaller tooth nearer the palm. In the ambulatory legs the carpus and dactylus are more than half as long as the propodus.

Color.—Tan or gray, with dots and small markings of red; color, however, can not be seen until decorative material is removed. (Way.)

Measurements.—Male (48833), length of carapace with rostrum 65.7, length of rostrum 19, width of carapace 39 mm.

Range.—From Bering Sea (Nunivak Island and Commander Islands) to Monterey Bay, California, and Honshu Island, Japan. Shallow water to 212 fathoms.

Material examined.—See table, pages 72–78.

OREGONIA BIFURCA Rathbun

Plates 26–28

Oregonia bifurca RATHBUN, Proc. U. S. Nat. Mus., vol. 24, 1902, p. 885 (type-locality, North of Rat Island, Aleutians, 270 fathoms, station 3785; holotype, Cat. No. 25287, U. S. N. M.); Harriman Alaska Exped., vol. 10, 1904, p. 171, pl. 6, fig. 5.

Diagnosis.—Rostral horns short, divergent. Supra-orbital arch not prominent nor angled posteriorly. Body sub-oblong.

Description.—Body and appendages covered with soft downy hairs. Carapace wider anteriorly than in *O. gracilis*, the width at base of postorbital spines about two-thirds of the branchial width. Tuberculation finer than in *gracilis*. Rostrum short, flat, horns divergent from their base, gradually tapering, acuminate. Postorbital spines similar in shape to the rostral horns, but shorter; they are directed more forward than in *gracilis*.

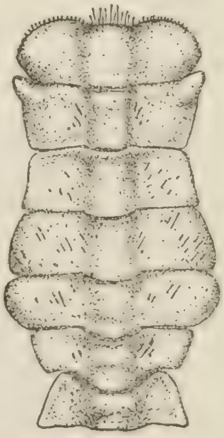
FIG. 21.—OREGONIA BIFURCA, MALE (46488), ABDOMEN, × 2.76

Basal article of antenna with spinulous outer and inner margins and a stout antero-external spine. Lower margins of arm furnished with stout spines, upper margin with much smaller spines. On the inner surface of the palm are four longitudinal rows of spinules, one just within the upper and the lower margins and one at the middle and below the middle. The fingers are nearly as long as the palm and gape ever so slightly in their basal two-fifths; at the base of the fixed finger an enlarged tooth fits into a hollow in the dactylus. The first ambulatory leg may exceed the cheliped.

Measurements.—Male (46488), length of carapace including rostrum 33.7, length of rostrum 5, width of carapace 25 mm.

Range.—Western part of Bering Sea. Depth 270 to 764 fathoms.

Material examined.—See table, page 78.

Genus EURYPODIUS Guérin

Eurypodius Guérin, Encyc. Méth., Hist. Nat., Entom., vol. 10, 1825, p. 700, footnote; Mém. Mus. Hist. Nat. Paris, vol. 16, 1828, p. 350; type, *E. latreillii* Guérin.—Milne Edwards, Hist. Nat. Crust., vol. 1, 1834, p. 283.—Dana, U. S. Expl. Exped., vol. 13, Crust., part 1, 1852, p. 100.—Miers, Journ. Linn. Soc. London, vol. 14, 1879, p. 646; *Challenger* Rept., Zool., vol. 17, 1886, p. 21.

Carapace elongate-triangular, moderately convex, and spinous or tuberculate above; a distinct postorbital, but no preorbital spine. Spines of rostrum contiguous, at least in part of their length. Abdomen seven-segmented. Antennae visible in dorsal view at sides of rostrum; peduncular articles slender. Merus of maxillipeds distally truncate, bearing the next article at its antero-internal angle. Chelipeds of male well developed, with the palm compressed or turgid and the fingers distally acute. Ambulatory legs considerably elongate, with the penultimate articles more or less dilated and compressed; the dactyls slightly arcuate, shorter than the propodites and reflexible against their inferior margins.

Contains not more than two species, inhabiting South American waters.

KEY TO THE SPECIES OF THE GENUS EURYPODIUS

A¹. Rostrum almost horizontal, only slightly arched upward in the middle of its length. No supraorbital spine..................latreillii, p. 80.

A². Rostrum of male inclined strongly upward (about 45°) from base to tips. A supraorbital spine..............................longirostris, p. 83.

Species on both sides of the continent: *latreillii.*

EURYPODIUS LATREILLII Guérin

Plates 30, 31, and 215

Eurypodius latreillii Guérin, Mém. Mus. Hist. Nat. Paris, vol. 16, 1828, p. 354, pl. 14 (type-locality, Iles Malouines [Falkland Islands]; type in Paris Mus.); Icon. Règne Anim. Cuvier, pl. 11, fig. 1 (female).—Milne Edwards, Règne Anim. Cuvier, Crust., Disciples ed., pl. 34bis, fig. 1.—Bell, Trans. Zool. Soc. London, vol. 2, 1836, p. 40.—Dana, U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 104; atlas, 1855, pl. 3, fig. 1.—Cunningham, Trans. Linn. Soc. London, vol. 27, 1871, p. 491.—Stebbing, Proc. Zool. Soc. London, 1900, p. 527.

Erypodius latreillia Milne Edwards, Hist. Nat. Crust., vol. 1, 1834, p. 284.

Eurypodius cuvieri Audouin, in de Haan, Fauna Japon., Crust., pl. H.

Eurypodius tuberculatus Eydoux and Souleyet, Voy. *Bonite*, Zool., vol. 1, pt. 2, 1842, p. 221, atlas, pl. 1, figs. 7–9 (type-localities, Chile and Peru; types in Paris Mus.).

Eurypodius latreillia Nicolet, in Gay, Hist. Chile, vol. 3, 1849, p. 123.

Eurypodius latreillei Milne Edwards and Lucas, d'Orbigny's Voy. l'Amér. Mérid., vol. 6, pt. 1, 1843, p. 4.—Targioni Tozzetti, Zool. *Magenta*, vol. 1, 1877, p. 9, pl. 1, figs. 14–20.—A. Milne Edwards, Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 10.—Miers, Proc. Zool. Soc. London, 1881, p. 64; *Challenger* Rept., Zool., vol. 17, 1886, p. 22.—Coutière, Bull. Mus. Hist. Nat. Paris, vol. 6, 1900, p. 238 (two forms of male).—Lenz, Zool. Jahrb., Suppl. 5, 1902, p. 755.—Lagerberg, Schwed. Südpolar Exped., 1901–1903, vol. 5, Lief. 7, Anom. u. Brach., 1905, p. 17.

Eurypodius audouinii Milne Edwards and Lucas, d'Orbigny's Voy. l'Amér. Mérid., vol. 6, pt. 1, 1843, p. 3 (type-locality, Chile; type in Paris Mus.); vol. 9, atlas, 1847, pl. 1.—Nicolet, in Gay, Hist. Chile, vol. 3, 1849, p. 123.—Dana, U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 104.—Cunningham, Trans. Linn. Soc. London, vol. 27, 1871, p. 491.

Eurypodius septentrionalis Dana, Amer. Journ. Sci., ser. 2, vol. 11, 1851, p. 270 (type-locality, Nassau Bay, Fuegia; types not extant); U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 101; atlas, 1855, pl. 2, fig. 6*a–d*.—Cunningham, Trans. Linn. Soc. London, vol. 27, 1871, p. 491.

Eurypodius brevipes Dana, Amer. Journ. Sci., ser. 2, vol. 11, 1851, p. 270 (type-locality, Nassau Bay, Fuegia; types not extant); U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 103; atlas, 1855, pl. 2, fig. 7*a–c*.—Cunningham, Trans. Linn. Soc. London, vol. 27, 1871, p. 491.

Paramithrax peronii? Targioni Tozzetti, Atti Soc. Ital., Milan, vol. 15, 1872, p. 2; not *P. peronii* Milne Edwards.

Eurypodius danae Targioni Tozzetti, Zool. *Magenta*, vol. 1, 1877, p. 15 (type-locality, Valparaiso; type not extant).

Eurypodius audouini Targioni Tozzetti, Zool. *Magenta*, vol. 1, 1877, p. 16, pl. 1, figs. 1–3, 7, 9, 12, 13, 21.

Diagnosis.—Rostrum almost horizontal. Supraorbital margin without spine. Carapace wide, length without rostrum less than one and a fourth times its width.

Description.—Surface pubescent. Carapace rough with tubercles and short spines; five median spines: two gastric, one genital, one cardiac, and one above the posterior margin. Branchial region surmounted by a spine, from which a row of smaller spines extends obliquely to the inner angle; margin anteriorly spinous; a spine near the antero-external angle, from which an irregular row extends backward above the margin. Hepatic region with a spine near the inner angle and one or two on the margin. Gastric region with a stout marginal spine behind the postorbital spine, and a dorsal row of spinules extending forward to each rostral horn. Many of these spines may be replaced by tubercles; there are two tubercles side by side on the genital and the intestinal regions.

Rostral horns stout, tapering distally, contiguous, usually less than one-third the length of postrostral portion of carapace, curving downward toward the tips. The horns may have a buttonhole interspace or may be slightly divergent in the terminal portion.

Material examined of Eurypodius latreillii

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude S.	Longitude W.									
East coast Patagonia:	° ′ ″	° ′ ″			°*F*						
Off Gulf of San Matias	42 24 00	61 38 30	43	dk. S. bk. Sp.		Jan. 14, 1888	2768	*Albatross*	1♂	21883	
	48 37 00	65 46 00	58	gy. S. bk. Sp.		Jan. 16, 1888	2770	do	2♀ (1 ovig.)	21884	
Off Cape Virgins	51 34 00	68 00 00	50.5	gy. S. bk. Sp.	49.4	Jan. 17, 1888	2771	do	2♂ 5♀	21885	
Do	52 23 00	68 11 00	10	fne. gy. S.		do	2773	do	13 y	21886	8 with slightly divergent horns.
Strait of Magellan:											
	52 23 00	68 31 30	17	S. G		Jan. 18, 1888	2774	do	1♂ 1♀	21887	
	52 22 30	69 22 00	29.5	S. St		do	2775	do	3♂	21888	1 (adult) with horns divergent for a short distance.
	52 41 00	69 55 30	21	S. G		do	2776	do	2♂	21889	
	52 38 00	70 10 30	19.75	G		Jan. 19, 1888	2777	do	{1 y {1♂	21890 40627	
Gregory Bay						do		do	4♂ 8♀	21895	2 (half grown) have partially divergent horns.
Laredo Bay						Jan. 22, 1888		do	7♂ 5♀	18218	
	53 01 00	70 42 15	61	gy. S. bk. Sp.	47.9	Jan. 23, 1888	2778	do	44	21891	Mostly half grown; 17 with horns partially divergent.
	53 06 00	70 40 30	77.5	gn. Oz	46.9	do	2779	do	4♂ 4♀	21892	
Sandy Point						Jan. 23-24, 1888.		do	2♂ 1♀ 2 y	21896	
West coast Patagonia:											
Mayne Harbor						Feb. 5, 1888		do	1♂	21894	
Latitude Cove						Feb. 6, 1888		do	2♂ 2♀	21893	3 (adult) with horns divergent for a short distance.
Chile: Valparaiso										Copenhagen Mus.	

A strong, spine-pointed, interantennular tooth. Orbital arch unarmed. A conical spine or tubercle on first segment of abdomen.

Merus and carpus of chelipeds tuberculate and spinous; merus triangulate, more or less swollen, upper margin spinous, the row of spines continued on the carpus. Manus roughly granulate, either wide and swollen or narrow and compressed (a less developed form); fingers gaping for more than half their length, dactylus with a large tooth midway of its length; immovable finger with a smaller basal tooth; these teeth are much reduced in the narrow form of manus. The two forms of cheliped are found in individuals of the same size and from the same locality.

The propodus of the ambulatory legs usually greatly exceeds in length the carpus, but occasionally the carpus nearly equals or even exceeds the propodus. The latter is dilated below and the distal half of this expansion, where the dactylus closes, is margined with a thick fringe of hair. The dactylus, as a rule, is more than half the length of the propodus.

Color.—Greenish brown (Guérin). General color, light green; lateral portions of carapace and feet covered with a grayish down (Milne Edwards and Lucas).

Measurements.—Male (21887), length of carapace including rostrum 69, length of rostrum 12, width of carapace 51.6 mm.

Variation.—Extremely variable, especially as to length and direction of horns, prominence and sharpness of tubercles and spines, amount of pubescence, development of chelipeds of adult male, and relative length of carpus and propodus of legs. In the young and immature the horns are more horizontal than in the old and are more likely to diverge towards the tips; as they grow the horns gradually arch upward, the tips get in contact or occasionally overlap.

Range.—From Peru to Strait of Magellan and northward to Rio de Janeiro (Bell); Falkland Islands. Depth, 4 to 77.5 fathoms.

Material examined.—See table, page 82.

EURYPODIUS LONGIROSTRIS Miers

Plate 35, figs. 1 and 2

Eurypodius longirostris Miers, *Challenger* Rept., vol. 17, 1886, p. 23, pl. 5, figs. 1, 1*a* (type-locality, "off the coast of Chiloe," lat. 50° 08′ 30″ S., long. 74° 41′ 00″ W., 175 fathoms, station 308 [18]; type in Brit. Mus.).—Stebbing, Proc. Zool. Soc. London, 1900, p. 527.

Euripodius longirostris Murray, *Challenger* Rept., Summary, pt. 2, 1895, p. 1152.

Diagnosis.—Rostrum of male inclined strongly upward. Supraorbital margin armed with a spine. Carapace narrow, length without rostrum one and a fourth times its width.

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[18] "Off the coast of Chiloe" is an error, as station 308 is much farther south, off northeastern end of Madre Island. See *Challenger* Summary, part 2, 1895, p. 1149. The error was due to a mix-up with station 303; see Summary, p. 1138.

Description.—Distinguished by the remarkably reflexed rostrum of the male, which is bent upward at an angle of nearly 45° to the front, with the spines laterally divergent toward their apices. Body and limbs thinly pubescent, carapace narrow in proportion to its length, with the spines disposed as commonly in specimens of *E. latreillii* of the same size and sex, as, for instance, two upon the gastric, one upon the cardiac, one on each branchial region and one on the posterior margin, besides some smaller granules on the sides of the hepatic and branchial regions. There is a small spine on the upper margin of the orbit; also a postocular spine. The spines of the rostrum considerably exceed half the length of the carapace,[18] the spines are contiguous at the base, but in the distal third of their length they curve laterally and outward; there is a strong spine on the interantennular septum. Eyes, antennae, and maxillipeds of same form as in *E. latreillii.* The chelipeds have, as in the young males of that species, the palms not turgid but compressed, the fingers acute, without teeth, and without any intramarginal hiatus when closed; the merus and carpus have a few distant granules on their upper margins. The ambulatory legs of the single male are very imperfect, but they were evidently slender and considerably elongated, with the penultimate articles a little larger than the preceding and very little dilated.

An immature female from the same locality has the rostrum scarcely at all reflexed and somewhat shorter, with the spines less divaricate at the apex; the chelipeds and legs clothed with a denser pubescence; the latter much less elongated. This specimen, though distinguished by the narrower carapace and more elongated rostrum, much more nearly resembles typical *E. latreillii* than does the male.[19] (Miers.)

Measurements.—Length of carapace to base of rostrum, about 19; length of rostrum about 11; width of carapace a little over 15, length of cheliped nearly 32 mm. (Miers.)

Range.—Known only from the type-locality, inland waters of western Patagonia (or Magallanes Territory, Chile), off northeastern end of Madre Island, Wide Channel, lat. 50° 08′ 30″ S., long. 74° 41′ 00″ W., 175 fathoms, blue mud, January 5, 1876, station 308, *Challenger*; 1 male (type), 1 female (Brit. Mus.).

Genus EUCINETOPS Stimpson

Eucinetops Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 191 [63]; type, *E. lucasii* Stimpson.—A. Milne Edwards, Crust. Rég. Mex., 1875, p. 119.—Miers, Journ. Linn. Soc. London, vol. 14, 1879, p. 644.—Rathbun, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 55.

Carapace oblong. Rostrum small, bifid, little deflexed. Eyes very long, reaching much beyond the margins of the carapace.

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[19] This is not borne out by Miers's fig. 1, pl. 5.

Orbits small, inclosing only base of eye peduncles; external angle acute, spiniform; superior margin with one fissure, without teeth and spines. Antennular fossae not deep, round, margins obtuse. Basal article of external antennae small, armed at external angle with a minute tooth or spine; movable part depressed, first and second articles very broad. Epistome very short or wanting. Buccal cavity very broad anteriorly. Merus of outer maxillipeds subtriangular, outer front angle prominent, distal margin longest; palpus very short and stout, terminal article much narrower than the others.

Found sparingly on the west coast of Mexico and Panama, and in the Bahamas and West Indies.[20]

KEY TO THE SPECIES OF THE GENUS EUCINETOPS

A¹. Rostral horns long and narrow.
  B¹. Rostral horns blunt at tips. Fingers of male gaping..........lucasii, p. 85.
  B². Rostral horns acute at tips. Fingers of male not gaping..rubellula, p. 86.
A². Rostral horns short and broad, tipped with a small spine.
  B¹. Eyes reaching beyond postocular tooth by little more than length of cornea..........panamensis, p. 87.
  B². Eyes reaching beyond postocular tooth by half their length..blakiana, p. 88.

Analogous species on opposite sides of the continent: *blakiana* (Atlantic); *panamensis* (Pacific).

EUCINETOPS LUCASII Stimpson

Eucinetops lucasii Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 191 [63], female, not pl. 2, fig. 3, male (type-locality, Cape St. Lucas; type not extant).—A. Milne Edwards, Crust. Rég. Mex., 1875, p. 119.

Peltinia longioculis Lockington, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 76 [14] (type-locality, Lower California; type not extant).

Diagnosis.—Horns blunt. Fingers of male gaping. Transorbital width less than half greatest width of carapace in male.

Description of female.—"Body and feet hairy above. Carapax oblong, subquadrate, with very uneven surface, not granulated, much depressed between the branchial and hepatic regions; gastric region strongly prominent, with three small tubercles in a transverse row across the middle. Protuberant parts of frontal region clothed with curled hairs. Horns of the rostrum bluntly rounded at the extremities. Lateral margins of the carapax without teeth or spines. Feet moderate, cylindrical, unarmed. Inferior surfaces short-pubescent, not densely so." (Stimpson.)

Description of male.—"Posterior portion of carapax broadly triangular, post-orbital spine expanded, trans-orbital width rather less than half the greatest width; rostrum short, stout, bifid. Stomachal region prominent. Fixed joint of external antennæ emarginate at apex, the outer tooth acute, not longer than the inner. Peduncles of eyes about equal in length to the distance between the eyes. First pair of feet about equal in length to the second and to the length of the body; meros tuberculate; hand thin, broad, smooth, marbled; fingers touching at the extreme tip only; a tooth on the inside of the movable finger near its base. Four hinder pairs short, slender, cylindrical, setose, except the tarsus, which is smooth and shining, like the manus of the first pair. Carapax and abdomen tomentose above and below." (Lockington.)

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[20] *Eucinetops ? stimpsoni* Miers, Ann. Mag. Nat. Hist., ser. 5, vol. 4, 1879, p. 3, is probably not a true *Eucinetops*, but may be called *Anacinetops* as Miers suggested.

Measurements.—Female, type of *E. lucasii*, length of carapace 0.36 inch (9.1 mm.), width 0.27 inch (6.8 mm.). (Stimpson.)

Male, type of *Peltinia longioculis*, length and width of carapace nearly equal, about 8 mm. (Lockington.)

Remarks.—In a manuscript note in reference to *P. longioculis*, Lockington says: "Stimpson's description of *Eucinetops lucasii* agrees closely with this. He describes a female, but figures a male specimen which he states may not unlikely be of a different species. My specimen (male) agrees pretty closely with his description of the female, but not with the figure."

Range.—Cape St. Lucas, Lower California, Mexico.

EUCINETOPS RUBELLULA Rathbun

Plate 219, fig. 6

Eucinetops lucasii Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 192 [64], male, pl. 2, fig. 3, not *E. lucasii*, female.

Eucinetops rubellula Rathbun, Proc. Biol. Soc. Washington, vol. 36, 1923, p. 73 (type-locality, Cape St. Lucas, Lower California, Mexico; type not extant).

Diagnosis.—Horns acute. Fingers of male not gaping. Red spot on dactyls of ambulatories.

Description of male.—Compared to the female of *E. lucasii*, it is smaller and narrower,[21] with the horns of the rostrum acutely pointed, and the external antenna narrower, with the external angle of the first movable article considerably produced. Chelipeds large, much compressed and crested; carpus with two slight crests confluent posteriorly in a projecting angle or point; hand rather broad, flat, tapering to the slender fingers, not gaping. Dactyli of ambulatory legs much shorter than in female *lucasii*. (Stimpson.)

Color.—Apparently pale orange; a distinct red patch on dactyli of ambulatory feet at middle. (Stimpson.)

Measurements.—Stimpson does not give any, but according to his figure, which is twice natural size, the length of the carapace to tips of horns is 8 mm., length on median line to base of horns, 6.7 mm., width of carapace 6.2 mm.

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[21] The statement of narrower body is not sustained by the figure, when compared with the measurements of the female type of *E. lucasii*.

Range.—Known only from Stimpson's description of the type-specimen, which no longer exists.*

EUCINETOPS PANAMENSIS Rathbun

Plate 23, figs. 3 and 4

Eucinetops panamensis Rathbun, Proc. Biol. Soc. Washington, vol. 36, 1923, p. 73 (type-locality, Pearl Islands, Bay of Panama; holotype, Cat. No. 2040, M. C. Z.).

Diagnosis.—Rostral horns widely separated, tipped with a spine. Carapace tuberculate. Eyes extending slightly beyond postorbital tooth.

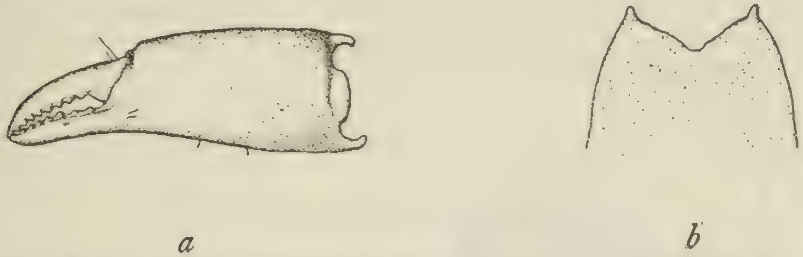

Fig. 22.—Eucinetops panamensis, male (55120). *a*. Left chela, × 24. *b*. Rostrum, × 17.6.

Description.—Carapace high on the median line where it is strongly tuberculate; three large tubercles cover the cardiac region while a smooth oblong tubercle forms a bridge to the gastric region; a large, median intestinal tubercle. Branchial regions also tuberculate. Lateral angle marked by a small but strong spine; antero-lateral margin nearly straight, tuberculate, interrupted slightly between the hepatic and branchial regions. Rostrum one-third as wide as the fronto-orbital distance, divided less than half way into two shallow triangular teeth, each tipped with a small sharp curved spine. Postocular tooth large, triangular, almost equilateral, obliquely upturned. Eyes exceeding postocular tooth by little more than length of cornea; stalks not tapering. First movable segment of antenna very large, as wide as half the rostrum, furnished on its antero-external margin with a row of long hairs.

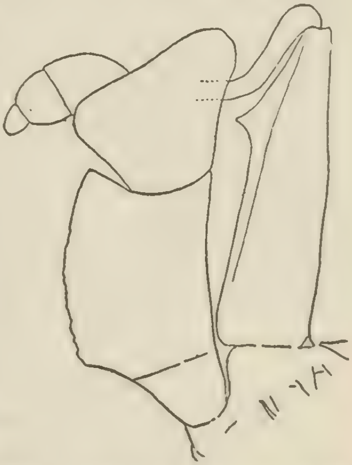

Fig. 23.—Eucinetops panamensis, male (55120), maxilliped, × 29.5

Chelipeds shorter than next leg, chelae tapering distally, fingers narrowly gaping in proximal half. Ambulatory legs hairy; dactyli strongly curved, terminating in long, pale, horny spines.

Measurements.—Male, holotype, length of carapace to tip of horns 10.5, width including spines 8.5 mm.

Range.—Gulf of California, Mexico, to Panama.

Material examined.—

San Francisquito Bay, Lower California; beach; April 9, 1911; *Albatross;* 1 male, soft shell (56219).

Pearl Islands, Bay of Panama; S. W. Garman; 1 male (holotype) and 1 female (2040, M. C. Z.), 1 male (55120, U.S.N.M.).

EUCINETOPS BLAKIANA Rathbun

Plate 23, figs. 1 and 2

Eucinetops blakiana Rathbun, Proc. U. S. Nat. Mus., vol. 19, 1896, p. 141 (type-locality, Port Royal, Jamaica; holotype, Cat. No. 19405, U. S. N. M.); Ann. Inst. Jamaica, vol. 1, 1897, p. 4; Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 252; Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 55.

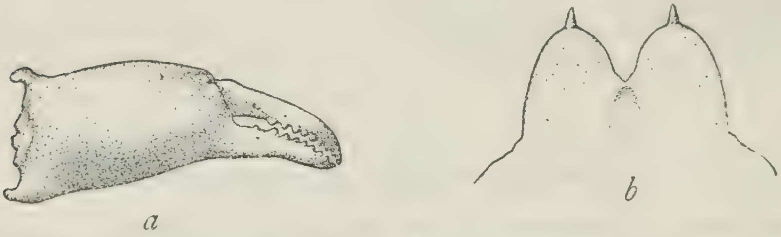

Fig. 24.—Eucinetops blakiana (19405). *a*. Right chela of male, × 35. *b*. Rostrum of female, × 20

Diagnosis.—Rostral horns broad, triangular, tipped with a spine. Fingers of male not gaping. Carapace width behind postorbital spine three-fourths of branchial width.

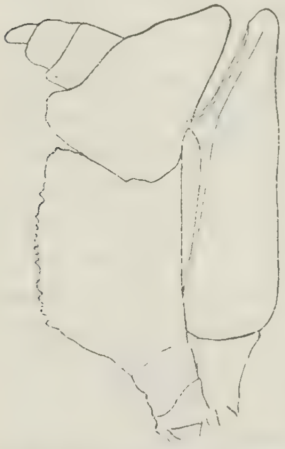

Fig. 25.—Eucinetops blakiana, female (19405), maxilliped, × 29.5

Description.—Antero-lateral margins slightly converging anteriorly, nearly straight. Surface uneven; median regions elevated, hepatic region depressed, separated from branchial by a deep hollow and a marginal sinus. Antero-lateral margin tuberculate, a spinule at postero-lateral angle; a few additional tubercles on upper surface of branchial region and on intestinal region. Front depressed, with two triangular, rounded lobes, tipped with a small, sharp, upturned spine and separated by a V-shaped sinus. Outer orbital tooth longer than broad, acute, upturned, separated from upper margin of orbit by a narrow, rounded sinus. Eye-stalks filling orbit, tapering to near cornea; tip slightly enlarged. Antero-external lobe of first movable article of antennae moderately developed, a tooth at outer angle, not reaching end of rostrum.

Abdomen composed of seven free segments in both sexes; in the male constricted at fifth segment; sixth segment with convex lateral outlines; seventh rounded, broader than long. Chelipeds small, smooth, and shining; merus subtrigonal; carpus with a tubercle above, near merus; hands compressed, margins converging toward fingers. Ambulatory legs subcylindrical; dactyli very slender and much curved. Carapace and ambulatory legs clothed with hair.

Measurements.—Male, holotype, median length of carapace 4.4, length to tip of horns 4.7, width of carapace 3.3 mm. Female (19405), median length of carapace 5.9, length to tip of horns 6.3, width of carapace 5 mm.

Range.—Bahama Banks; West Indies.

Material examined.—

Bahama Banks; 1893; State Univ. Iowa Exped. (specimen in S. U. I.).

Port Royal, Jamaica; P. W. Jarvis; 1 male (holotype), 2 ovigerous females (19405).

Arroyo, Porto Rico; February 4, 1899; *Fish Hawk;* 1 young female (24219).

Genus ARACHNOPSIS Stimpson

Arachnopsis Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 121; type, *A. filipes* Stimpson.—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 181.

Carapace oblong, narrow, and somewhat truncated in front. Rostrum short, bifid. Orbital arch high, protuberant. Postocular lobe long, separated from the orbital arch by a deep, narrow fissure. Eye long, considerably overreaching the tip of the postocular lobe, but capable of being drawn back beneath it. Basal article of antennae with two spinulous crests on the inferior surface which meet anteriorly, the outer crest continued back to the angle of the buccal area; a small, sharp spine at extremity, pointing obliquely forward and outward, between which and the rostrum the long movable part of the antenna is exposed. Merus of maxillipeds broader than long, and with sharply prominent internal and antero-external margins. Ambulatory legs long, filiform, second pair longest; dactyls slightly curved, nearly as long as the penult article. The last three segments of the abdomen are coalesced in the female.

Contains only one species.

ARACHNOPSIS FILIPES Stimpson

Plate 32, figs. 1 and 2; plate 219, figs. 4 and 5

Arachnopsis filipes Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 121 (type-localities, off Conch, Carysfort and French Reefs, Florida, 34 to 45 fathoms; types not extant).—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 181; 1879, pl. 33, figs. 1–1c; Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 6.—Kendall, Bull. U. S. Fish Comm., vol. 9, for 1889 (1891), p. 303.—Rathbun, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 57; Bull. Lab. Nat.

Hist. State Univ. Iowa, vol. 4, 1898, p. 253.—A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 370, pl. 11, fig. 1.

Diagnosis.—Eye long, slender. Postocular spine long, directed obliquely forward. Rostrum short. Legs filiform, varying little in length.

Description.—Body armed above with three erect, slender, blunt spines, one gastric, one cardiac, and the other on the first segment of the abdomen; abdominal spine small, cardiac and gastric spines equal and about as long as the distance between the orbital arches; these last armed with a spinule. Carapace convex anteriorly, flattened posteriorly; surface smooth and glossy, naked, except for a few hairs on the anterior part of the branchial, the sides of the gastric, and the frontal region. Beneath, the subhepatic and pterygostomian regions are armed with spiniform granules. The triangular rostral teeth are widely separated at their tips by a shallow interspace, in which the sharp point of an interantennular tooth is visible in dorsal view. Antennae half as long as carapace.

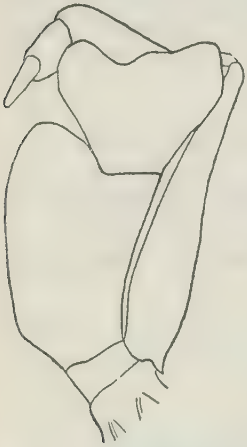

Fig. 26.—Arachnopsis filipes (15199), maxilliped, × 22

Chelipeds in male moderately enlarged, a little longer than carapace, much curved; edges of ischium, merus and basal portion of propodus, and surface of carpus spinulous. Remainder of propodus smooth, upper and lower margins convex; fingers as long as palm, gaping except near tips; the largest prehensile tooth is on immovable finger in middle of gape; just distad is an enlarged but still much smaller tooth on dactylus.

Sternum, abdomen and maxillipeds granulate.

Measurements.—Male (18117), length of carapace to extremity of rostral teeth 6.9, width of carapace 5.5 mm., length of ambulatory leg of second pair about 17 mm.

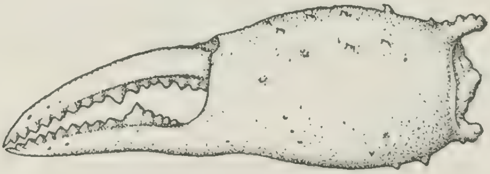

Fig. 27.—Arachnopsis filipes, male (18117), left chela, × 13.33

Range.—South and west coasts of Florida; Dominica and Barbados. Depth, 15 to 130 fathoms.

Material examined.—See table, page 91.

Material examined of Arachnopsis filipes

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
					°F						
Florida Straits (off Key West).	Sand Key Light bearing W. NW., Key West Light bearing N.		60			June 19, 1893	24	State Univ. Iowa Bahama Exped.	2♀	Mus. S. U. I.	
Do.	Sand Key Light bearing NW. by N., Key West Light, N. ½ E.		50-60			do.	27	do.	2♂ 3♀	do.	
Do.	Near the preceding					do.	29	do.	1♂	do.	
Do.	Sand Key Light bearing W. ½ N., about 6½ miles.		20			June 24, 1893	39	do.	2♂	do.	
Do.	Sand Key Light bearing W. about 8 miles.		15			do.	41	do.	1♀	do.	
	° ′ ″	° ′ ″									
Do.	24 25 45	81 46 00	45	Co.	75	Jan. 15, 1885	2318	*Albatross*	1♀	18115	
Do.	24 25 45	81 46 45	45	Co.	75	do.	2317	do.	1♂	18114	
Do.	24 26 00	81 48 15	37	Co.		do.	2315	do.	1♂	18113	
West coast of Florida	25 23 30	83 17 00	33.5	Sponge, Co.	68.5	Feb. 28, 1889	5072	*Grampus*	1♀	15196	
Do.	25 34 00	83 07 00	30	fne. S. bk. Sp.	68.5	Mar. 1, 1889	5078	do.	1♂	15198	
Do.	25 34 00	83 28 00	39	G. Co. fne. Sh.	69	do.	5076	do.	1♀	15197	Rhizocephalid parasite in abdominal cavity.
Do.	26 13 00	83 44 00	51	wh. S.	69	Mar. 18, 1889	5104	do.	1♀	15199	Do.
Do.	26 31 50	83 42 00	37.5	gy. S.	69	Mar. 23, 1889	5117	do.	1♀	15200	
Do.	28 45 00	85 02 00	30	gy. S. brk. Co.		Mar. 15, 1885	2405	*Albatross*	2♂	18117	
Do.	29 18 15	85 32 00	25	crs. gy. S. brk. Sh.		Feb. 7, 1885	2370	do.	1♂	18116	
Off Dominica	15 34 40	61 29 35	130	yl. S.	61.5	Jan. 25, 1879	178	*Blake*	1	2878, M.C.Z.	
Off Barbados			30			Dec. —, 1871		U. S. C. S. S. *Hassler.*	1♀	2058, M.C.Z.	
Do.			80			do.		do.	1♀	2059, M.C.Z.	2 Rhizocephalids in abdominal cavity.
Do.	13 11 54	59 38 45	73	Co. S. Sh.	70.75	Mar. 9, 1879	290	*Blake*	1	2610, M.C.Z.	
Do.	13 04 12	59 36 45	76	Co. brk. Sh.	64.75	Mar. 5, 1879	272	do.	1	2601, M.C.Z.	

Genus AEPINUS Rathbun

Apocremnus A. Milne Edwards, Crust. Rég. Mex., 1878, p. 184; type, *A. septemspinosus* A. Milne Edwards. Name *Apocremnus* preoccupied by Fieber, Wien Ent. Monschr., vol. 2, 1858, p. 320, for a genus of Hemiptera.—Alcock, Journ. Asiat. Soc. Bengal, vol. 64, 1895, p. 188.

Aepinus Rathbun, Proc. Biol. Soc. Washington, vol. 11, 1897, p. 163; substituted for *Apocremnus.*

Carapace triangular, or pyriform, wide behind, narrow in interorbital region. Rostrum short, bifid. A strong supraocular spine and postocular tooth or spine which is close to the eye.[22] Basal antennal article narrow, its antero-external angle forming a strong spine visible from above on either side of rostrum; remaining articles also visible. The maxillipeds completely close the buccal cavity, the ischium increases in width distally, the merus is as wide as or wider than the ischium. Chelipeds not much enlarged. Ambulatory legs short and slender, propodites distally thickened, dactyls capable of flexion against them.

In the male the last two abdominal segments are fused; in the female the last three are typically fused. (In *A. indicus* they appear to be all separate.)

Contains only two species, one on the Atlantic coast of middle America, the other in the Indian Ocean. Depth, 7 to 100 fathoms.

AEPINUS SEPTEMSPINOSUS (A. Milne Edwards)

Plate 32, figs. 3 and 4; plate 219, figs. 1–3

Apocremnus septemspinosus A. Milne Edwards, Crust. Rég. Mex., 1879, p. 185, pl. 35, figs. 5–5*d* (type-locality, Florida Strait, lat. 24° 55′ N., long. 83° 25′ W., 37 fathoms; type, Cat. No. 2882, M. C. Z.); Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 7.—Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 17.

Aepinus septemspinosus Rathbun, Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 254; Bull. U. S. Fish Comm., vol. 20, for 1900, part 2 (1901), p. 54.

Diagnosis.—Rostral projections lobiform. Seven dorsal capitate spines. A postocular tooth.

Description.—The carapace and feet bear a few hooked hairs; carapace punctate. The seven capitate spines from which the species takes its name are situated on gastric, cardiac, and branchial regions, these four spines being large and subequal; on the first abdominal segment, spine shorter and directed obliquely backward; and on the orbital arches, spines considerably smaller. Gastric region narrow and high; in front of spine there are a few tubercles and, on the outer slope, a triangular laminate projection with an acute tip. A tubercle either side of cardiac spine; margin of branchial region tuberculate. Hepatic region steep, a granulate ridge running down to a laminate tooth on the margin. A triangular pterygostomian tooth.

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[22] There is a small but distinct spine in *A. indicus* Alcock, Journ. Asiat. Soc. Bengal, vol. 64, 1895, pl. 4, fig. 2*a*, and Illus. Zool. *Investigator*, Crust., pt. 4, 1896, pl. 20, fig. 1*a*.

Front very short, formed of two rounded lobes separated by a narrow cut. The antennular cavities extend nearly to the extremity of the front and are separated by a partition developed inferiorly in a triangular tooth. Eyestalks short, with a flat upper surface, a tubercle on the anterior margin and another at the extremity in the emargination of the cornea. The postocular tooth is small and easily broken off; it is thin and, at its origin a little behind the orbit, is laid close to the carapace; it is directed first forward and then outward, close to the eye; viewed from behind it is subtriangular, viewed from below it is narrower. Basal article of antenna very deep, with a prominent crest below, which near the anterior end bifurcates, the longer, outer branch continuing to epistome where it terminates in a lobe. The exognath of the maxillipeds has a tooth on its outer margin.

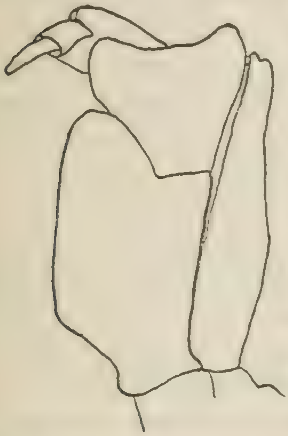

FIG. 28.—AEPINUS SEPTEMSPINOSUS (15165), MAXILLIPED, × 9.8

Chelipeds slightly enlarged; longitudinal lines of granules or small tubercles on margins and between; palm narrow; fingers gaping slightly in their basal half in male, the propodal finger hollowed out in the gape. Merus, carpus and propodus of ambulatory legs a little thickened at middle; dactylus very slender, slightly curved and hairy with below a row of minute spinules.

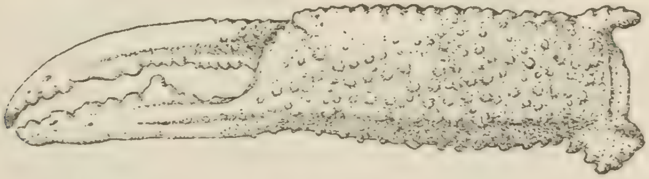

FIG. 29.—AEPINUS SEPTEMSPINOSUS, MALE (15165), LEFT CHELA, 3.3 MM. LONG

The sternum of the male has a very prominent crest connecting the coxae of the chelipeds; and four minor crests opposite the ambulatory legs; in the younger and less developed males the sternal segments have transverse lines of granules. Abdomen of old female coarsely pitted, terminal portion tuberculate, a smooth median carina; in the smaller females the abdomen is granulate, *Material examined of Aepinus septemspinosus*

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°C						
Bahama Banks						May 18, 1893		State Univ. Iowa Bahama Exped.	1♂ 1♀	Mus. S.U.I.	
West of Tortugas, Florida	24 43 00	83 25 00	37			1877-78	11	*Blake*	1♂	2882, M.C.Z.	Type.
West coast of Florida	28 46 00	84 49 00	26	crs. S. Co.		Mar. 15, 1885	2406	*Albatross*	1♂	46986	
Do	28 45 00	85 02 00	30	gy. S. brk. Co.		do	2405	do	1♀	18118	
Do	29 15 30	85 29 30	27	G		Feb. 7, 1885	2372	do	1♂ 1♀	15165	
Do	29 14 00	85 29 15	25	Co		do	2373	do	1♀	15164	
Off St. Thomas	Sail Rock, W. by N. ½ N., 6 m.		20-23	Co	25.8	Feb. 6, 1899	6079	*Fish Hawk*	1♂ 1♀	24150	
Off Culebra Island, Porto Rico.	Pt. Mula Lighthouse, SW. ½ S., 8½ m.		14.75	Co. S	25.5	Feb. 8, 1899	6086	do	1♂	24145	
Do	Pt. Mula Lighthouse, SW. ¼ S., 10½ m.		15.25	Co. S	25	do	6087	do	1♂ 1♀	24146	
Do	Culebrita Lighthouse, NE., 5¼ m.		15	Co	25.2	Feb. 10, 1889	6093	do	1♂	24144	
Off Vieques Island, Porto Rico.	Culebrita Lighthouse, N. ¼ E., 7¼ m.		21	Co	25.8	do	6089	do	1♀	24147	
Do	Culebrita Lighthouse, NE. by N., 10 m.		15	Co	26	do	6091	do	2♂	24149	
Do	Culebrita Lighthouse, NE. ⅜ E., 7¼ m.		16	Co	25.2	do	6092	do	1♀	24148	

the confluence of these granules forming intervening pits or depressions in the old.

Measurements.—Male (24150), length of carapace to tips of rostrum 7.4, width of carapace 6 mm. Female (15164), length of carapace 8.5, width 6.5 mm.

Variations.—The Porto Rican and St. Thomas specimens are more delicate than those from the Gulf. The four conical elevations of the carapace, gastric, cardiac and branchial (paired), are less high, but the surmounting spines are longer and slenderer, and the branchial spines tend to be less erect, more divergent. Besides the variations in the abdomen, already mentioned, the supraorbital spines vary in direction, being either slightly divergent, parallel, or convergent.

Range.—Bahama Banks; Straits of Florida; Gulf of Mexico; St. Thomas and Porto Rico; Island of Fernando Noronha, Brazil. Depth, 7 to 37 fathoms.

Material examined.—See table, page 94.

Genus EUPROGNATHA Stimpson

Euprognatha Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 122; type, *E. rastellifera* Stimpson.—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 182.—Miers, Journ. Linn. Soc. London, Zool., vol. 14, 1879, p. 645.—Rathbun, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 57.

Carapace pyriform. Rostrum short, with two small teeth or horns. Interantennular spine usually present, pointing forward and downward at a much lower level than rostrum. Basal antennal article narrowly triangular, with an outer and an inner granulate or dentate crest; armed at anterior extremity with a slender spine reaching forward as far or nearly as far as do the rostral horns; movable part of antennae exposed from its insertion. A spine or tubercle on orbital arch. Eye peduncle short, with a tubercle at the emargination of cornea. Postocular spine reaching beyond extremity of eye. Merus of external maxillipeds somewhat L-shaped, strongly produced beyond insertion of palpus in front and at postero-inner angle. Abdomen of male with last two segments coalesced.

Chelipeds with palms dilated; fingers in the male slightly gaping. Ambulatory legs of first pair much the longest, the others decreasing regularly in length. Dactyli long and slender, more than half the length of the propodal joints. These crabs are almost naked, the ambulatory legs with a few curled setae above.

Restricted to American waters. Distributed on the Atlantic coast, from south of Nantucket (lat. 40° 13′ N.) to south part of Gulf of Mexico and the West Indies as far as Grenada and Barbados; and on the Pacific coast from Lower California, Mexico, to Panama.

KEY TO THE SPECIES OF THE GENUS EUPROGNATHA

A¹. Interantennular spine present.
  B¹. Antennal spines about equaling, or falling short of, the pair of rostral spines.
    C¹. Interantennular spine long. Sternum forming a narrow border around postero-lateral portions of carapace. Antennal spines diverging anteriorly. Immovable finger without a noticeably enlarged tooth.
      D¹. Gastric, cardiac and branchial regions each surmounted by a tubercle. Legs without spinules____**rastellifera marthae,** p. 96.
      D². Gastric, cardiac and branchial regions each surmounted by a spine. Legs spinulous above.
        E¹. Dorsal spines stout. Legs finely and sparingly spinulous above. **rastellifera,** typical, p. 96.
        E². Dorsal and other spines slender. Legs more spinulous. Carapace closely and finely roughened____**rastellifera acuta,** p. 96.
    C². Interantennular spine very short. Sternum forming a wide border around postero-lateral portions of carapace______**gracilipes,** p. 101.
  B². Antennal spines considerably overreaching the pair of rostral horns. Anterior margins of postocular spines laciniated______**granulata,** p. 104.
A². Interantennular spine absent. Two spines on intestinal region. Gastric, cardiac and branchial regions each surmounted by a spine. Antennal spines as advanced as pair of rostral spines________**bifida,** p. 103.

ANALOGOUS SPECIES OF EUPROGNATHA ON OPPOSITE SIDES OF THE CONTINENT

Atlantic	Pacific
rastellifera	*bifida.*
rastellifera marthae	

EUPROGNATHA RASTELLIFERA Stimpson

EUPROGNATHA RASTELLIFERA MARTHAE, new subspecies

EUPROGNATHA RASTELLIFERA ACUTA A. Milne Edwards

Plate 33; plate 34, figs. 1 and 2; plate 35, figs. 3 and 4; plate 216

Euprognatha rastellifera Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 123 (type-locality, Florida Keys, 80 to 138 fathoms; type not extant).—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 183 (*Euprognata);* 1879, pl. 33, figs. 2–2*e;* Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 7. — Smith, Proc. U. S. Nat. Mus., vol. 3, 1880 (1881), p. 415, and vol. 6, 1883, p. 9; Rept. U. S. Fish Commr. for 1882 (1884), p. 347, pl. 1; figs. 3 and 3*a*, and for 1885 (1886), p. 621.—Rathbun, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 55; Bull. U. S. Fish Comm., vol. 20, for 1900, part 2 (1901), p. 58.

Euprognatha inermis A. Milne Edwards, Crust. Rég. Mex., 1878, p. 183, (*Euprognata);* 1879, pl. 35, figs. 2 and 2*a* (type-locality, Guadeloupe; type in Paris Mus.); Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 7.—A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 374, text-fig. 17.

Euprognatha acuta A. Milne Edwards, Crust. Rég. Mex., 1880, p. 348 (type-localities, St. Kitts, St. Vincent, and Barbados, 84 to 208 fathoms; types, Cat. Nos. 2728, 2580, 2600, M. C. Z.); Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 7.—A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 376, pl. 11, fig. 3.

Euprognatha rastellifera spinosa Rathbun, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 55 (type-locality, off Havana; holotype, Cat. No. 18108, U.S.N.M.).

?*Inachus cardenensis* Gundlach and Torralbas, An. Acad. Habana, vol. 36, 1899 (1900), p. 299, text-fig. (type-locality, Bay of Cardenas, Cuba; type in Mus. Habana?); reprint, 1917, pl. [1], fig. 3.

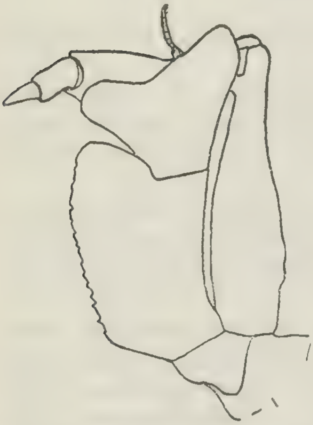

Fig. 30.—Euprognatha rastellifera marthae (3350), maxilliped, × 11.1

Diagnosis.—Antennal spines nearly or quite as advanced as the front and directed obliquely forward. Interantennular spine equaling or surpassing the front. Four principal regions of carapace each surmounted by a spine or tubercle.

Description.—Carapace granulate, a tubercle or spine on the gastric, cardiac, and each branchial region and on supraorbital margin. Postorbital projection dentiform, tapering to a slender point. Frontal teeth short, spiniform or triangular; basal antennal article terminating in a slender spine directed obliquely forward and equally advanced with the front or nearly so. Interantennular spine inclined downward, equaling or surpassing the front. A few small spines on sides of branchial and on hepatic and pterygostomian regions. Sternum regularly granulated, except on concave portion between the chelipeds.

Chelipeds nearly twice as long as carapace, granulate, margins spinous; manus swollen; fingers more than half the length of palm, gaping, though narrowly, for two-thirds their length. Ambulatory legs granulate, with tufts of curled setae and often small spines.

Variations.—In the northern part of its range where the species occurs in greatest abundance, the dorsal protuberances are very short, usually tubercles or sometimes short truncate spines; the postorbital projection is rather broad, triangular, dentiform; the margins of the merus of the chelipeds are irregularly granulate; the legs are granulate, not spinulous. This form is designated as *Euprognatha rastellifera marthae*, new subspecies.

Among the Florida Keys which is the type region for the species, the four dorsal protuberances are each surmounted by an undoubted spine of medium length, capitate; the postorbital projection is narrower and the spines of the frontal region slenderer than in the northern form; the merus of the chelipeds is somewhat rougher; the legs are finely and sparingly spinulous.

The most southern form (Havana, Porto Rico) has longer, slenderer and sharper spines; surface of carapace more closely and finely roughened; spines bordering the merus of the chelipeds well developed; legs more spinulous; carapace a little narrower and higher and the regions more deeply separated than in more northern forms. This form is *E. rastellifera acuta.*

None of these forms is entirely restricted to its own range, they overlap one another, and two forms may occur in the same haul. (See table, pages 98–101.)

The specimen of *rastellifera* figured by A. Milne Edwards [23] is a typical one, but the roughness of the merus of the cheliped is not indicated. The subspecies *marthae* was described and figured by S. I. Smith, 1881 to 1886.[24] I am unable to say whether *inermis* should rank as a subspecies or not; it may be identical with *marthae*.

Measurements.—Male, holotype of *marthae* (18749), length of carapace 14.3, width 11.6 mm. Typical male *rastellifera* (55482), length 9.8, width 7 mm. Male, *acuta*, holotype of *spinosa* (18108), length of carapace 9, width 6.8 mm. The length is measured to the tip of the rostral teeth.

Range.—From off Nantucket Island, Massachusetts, to Straits of Florida, southern part of Gulf of Mexico, and Caribbean Islands, as far as Grenada and Barbados. Depth, 15 to 387 fathoms.

Material examined.—See table, pages 98–101

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[23] Crust. Rég. Mex., 1879, pl. 33, figs. 2–2*e*.

[24] Proc. U. S. Nat. Mus. vol. 3, 1880 (1881), p. 415, and vol. 6, 1883, p. 9; Rept. U. S. Fish Commr. for 1882 (1884), p. 347, pl. 1, figs. 3 and 3*a*, and for 1885 (1886), p. 621.

Material examined of Euprognatha rastellifera

Locality	Bearings						Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.			Longitude W.											
	°	′	″	°	′	″			°F						
South of Nantucket	39	57	00	69	28	00	120	S	47	Sept. 14, 1881	1035	*Fish Hawk*	2♀	34210	*marthae.* Larger female lacks median tubercles.
Do	39	58	00	69	30	00	94	S	51	do	1036	do	1	Y. U. M.	
Do	39	51	00	69	51	30	134	hrd. S. Sponges	52	Aug. 4, 1881	940	do			On record, but not examined by writer.
Do	40	01	00	69	56	00	79	hrd. S. M	52	do	941	do	numerous	3657	
Do	40	00	00	70	06	00	93	S. Sh	66	Sept. 21, 1881	1040	do	10	Y. U. M	
Do	39	58	00	70	06	00	146	do	47	do	1038	do	2	do	
South of Marthas Vineyard	40 to 40	05 05	00 42	70 to 70	22 23	06 00	64–65			Sept. 4, 1880	865 to 867	do	20	do	
Do	40	02	18	70	23	06	192	fne. S	50	do	869	do	6	do	
Do	40	02	54	70	23	40	115	M. fne. S	49	do	871	do	1♀ numerous 1♂	55485 18746 38020	*acuta.* *marthae.* typical.
Do	40	05	39	70	23	52	86	S.G.Sh.Sponge	50.5	do	872	do	1♂ 1♂	40762 38019	*marthae.* Antennal spines overreach front.
Do	40	03	00	70	31	00	100	yl. M	52	Aug. 23, 1881	949	do	25	Y. U. M	
Do	40	07	00	70	32	00	71	S. Sh. M	52	do	950	do	1♂ 1♀	21463	
Do	40	13	00	70	41	54	63	gn. M	49	July 16, 1881	920	do	7♂		On record but not examined by writer.
Do	40	07	48	70	43	58	67	do	52	do	921	do	200	3350	*marthae.*
Do	40	03	48	70	45	54	69	gn. M. S	52	do	922	do	numerous	4789	
Do	40	01	24	70	46	00	98	S	52	do	923	do	26♂ 11♀		On record but not examined by writer.
Do	39	55	00	70	47	00	229	S. M	42	do	925	do	5♀		Do.
Southwest of Marthas Vineyard.	39	55	00	70	54	15	142.5	M	52	Sept. 13, 1880	878	do	25	Y. U. M	
Do	39	56	00	70	54	18	126	sft. sticky M	57	do	877	do	20	5773, 37971	*marthae.*
Do	39	57	00	70	56	00	120	do	53	do	876	do	6	Y. U. M	
Do	40	02	00	70	57	00	100	do	51	do	873	do	numerous	18748	
Do	40	00	00	70	57	00	85	do	51	do	874	do	do	18749, 34013, 34015	1 male is holotype. *marthae.*
Do	40	25	35	71	10	30	44	gn. M	49	July 21, 1880	346	*Blake*	1♀ ovig	3178, M. C. Z	Do.
East of New Jersey	39	48	00	71	48	30	120	br. M. S		Aug. 10, 1885	2559	*Albatross*	4	10590	Woods Hole Mus.

East of Delaware Bay	38 53 30	72 52 00	188	gn. M. S		Sept. 21, 1885	2591	do	1♂ 1♀	11101	*marthae.*
Do	38 39 00	73 11 00	130	S	49	Oct. 10, 1881	1043	*Fish Hawk*	10♂	4846	Do.
Do	38 46 00	73 05 45	102	gn. M	53.3	Sept. 18, 1887	2746	*Albatross*	5	12742	Y. U. M.
Do	38 31 00	73 21 00	156	S	49	Oct. 10, 1881	1047	*Fish Hawk*	7♂	4841	*marthae.*
Do	38 22 05	73 33 40	89	gn. S. bk. Sp	56.5	July 18, 1880	335	*Blake*	1♂	3176, M.C.Z.	Do.
East of Chesapeake Bay	37 26 00	74 19 00	56	S. Sh	55	Nov. 16, 1880	896	*Fish Hawk*	1♀ juv	40761	*acuta*, probably.
Do	37 22 00	74 29 00	57.5	S	54	do	899	do	4♂ 2♀	4847	*marthae*, with tendency to longer carapace spines.
Do	37 19 45	74 26 06	102	gn. M. Sh		Mar. 23, 1883	2004	*Albatross*	26♂ 4♀	5527, 5537	*marthae.*
Do	37 18 11	74 27 36	82	bu. M. S. brk. Sh.		do	2005	do	10♂ 2♀	5520, 5542	*marthae.*
Do	37 10 15	74 32 00	143	gn. M. fne. S		June 3, 1885	2123	do	3	15155	
Do	37 08 30	74 33 30	85	crs. gy. S. bk. Sp. brk. Sh.	52.5	do	2422	do	54	10092	Do.
Do	37 07 50	74 34 20	167	gy. S	46.8	Oct. 18, 1884	2264	do	4♂ 2♀	8741	Do.
Do	37 07 40	74 35 40	70	gn. M. G	57.9	do	2265	do	80	8775, 8906	*marthae*, one specimen with tendency to longer carapace spines.
Do	37 07 00	74 34 30	64	fne. gy. S. P		June 3, 1885	2421	do	13	15154	
Do	37 03 20	74 31 40	104	bk. S. M. G	47.7	Apr. 5, 1885	2420	do	26	15153	*marthae.*
Do	36 41 15	74 39 50	66.5			Apr. 30, 1883	2012	do	1♂	7133	Do.
East of Cape Hatteras, North Carolina.	35 43 00	74 53 30	45	gy. & bk. S		Oct. 21, 1884	2308	do	1♀	8864	Y. U. M.
Do	35 12 30	75 05 00	48	crs. gy. bk. S	77	Oct. 19, 1884	2269	do	3♂	8748	
Gulf Stream	30 m. due S. of Cape Lookout Lightship, North Carolina.			In trawl				*Fish Hawk*	3♂	55483	*acuta.*
									1♂ 2♀	51086	typical.
									1♀	55484	*marthae.*
Off South Carolina	32 53 00	77 53 00	99				2313	*Albatross*	1♂	9441	*acuta.*
Off Fowey, Fla			80			Aug., 1916	354	*Eolis*, J. B. Henderson.	1♀	50929	*marthae.*
Do			100			May, 1917	360	do	1♀	50930	typical.
Do			75–100			do	361	do	1♂ 1♀	50931	Do.
Do			95			do	362	do	1♂	50932	Do.
Off Carysfort, Fla	25 20 30	79 58 00	217	gy. S	42.6	Apr. 9, 1886	2642	*Albatross*	1♂	18110	*marthae.*
Off Sambo Key, Fla			120			1916		*Eolis*, J. B. Henderson.	1♂	55486	*acuta.*
Gulf Stream off Key West	24 21 55	81 58 25	98	S	55	Feb. 14, 1902	7279	*Fish Hawk*	2♀	46977	typical.
Do	24 17 05	81 58 25	132	S	52	do	7280	do	1♂	46978	Do.
Do	24 17 30	81 53 30	127	S. G	53	do	7283	do	2♂	46979	Do.
Florida Straits	Sand Key, Florida, S. by E.		85					*Eolis*, J. B. Henderson.	1♂ 2♀	55489	Do.
Do	Off Sand Key.		120			1916		do	1♂	55482	Do.
Do	Pourtales Plateau, 8 m. S. of Sand Key Light.		100					do	1♂	46976	Do.

Material examined of Euprognatha rastellifera—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°*F*						
Florida Straits	Sand Key Light bearing NW. by N., Key West Light, N. ½ E.		50-60			June 19, 1893	27	State Univ. of Iowa Bahama Exped.	4♂ 3♀	Mus. S. U. I.	
Do	Sand Key Light bearing N. about 6 miles.		116			do	28	do	3♂	do	
Do	Near the preceding						29	do	1♂	do	
Do	Sand Key Light bearing N. ½ W., about 6 miles.		ca. 105			June 20, 1893	33	do	2♀	do	
Do	Off Key West, Sand Key Light bearing N.NW., about 5 miles.		ca. 90			June 21, 1893	35	do	3♂	do	
Do	Sand Key Light bearing W., about 8 miles.		15			June 24, 1893	41	do	1♀	do	
Do	Bearings about as in preceding.					do	42	do	1♀	do	
Do	Key West Light bearing NW. by N., Sand Key Light, W. by N.		ca. 80			June 26, 1893	47	do	3♂	do	
Do	Key West Light bearing NW. by N., Sand Key Light, W. by N. ½ N.		ca. 80			do	48	do	2♂ 1♀	do	
Do	American Shoal Light bearing N. by W., 10 miles.		ca. 100			June 27, 1893	51	do	1♂	do	
Pourtales Plateau	24 16 00	81 22 00	ca. 200			do	56	do	1♂ 2♀	do	
Off American Shoal	American Shoal Light bearing NE. by N., 8 miles.		70-80			June 29, 1893	62	do	2♀	do	
West of Tortugas	24 37 30	83 36 00	110		58.5		26	*Blake*	1♂	2880, M.C.Z.	
Off Havana, Cuba						May 26, 1893		State Univ. of Iowa Bahama Exped.	2♀	Mus. S. U. I.	
2½ miles northwest of Havana Light.			387	Co	49	Apr. 30, 1884	2152	*Albatross*	1♀	7791	*acuta.*

Off Havana, Cuba	23	10	39	82	20	29	192	Co		May 1, 1881	2161	do	1♂ 1♀	7781	Do.
Do	23	10	39	82	20	21	201	Co		Jan. 19, 1885	2342	do	4♂ 1♀	18108	*acuta.* 1 male is holotype of *spinosa.*
Do	23	10	39	82	20	21	216	Co		Jan. 20, 1885	2347	do	1♂ 1♀	9528	*acuta.*
Do	23	10	39	82	20	21	200	Co		do	2346	do	1♂ 1♀	9881	Do.
Do	23	10	39	82	20	21	211	Co		do	2348	do	1♂ 1♀	9529	Do.
Do	23	10	40	82	20	15	182	Co		do	2349	do	1♂	9531	Do.
Do	23	10	40	82	20	15	181	Co		do	2345	do	1♀	18109	Do.
North part of Yucatan Bank.	23	32	00	88	05	00	95				32	*Blake*	2♂ 2♀	2879, M.C.Z.	typical.
Mayaguez Harbor, Porto Rico.	Customhouse, E. ⅝ S., 9 miles.						220–225	rky	°C 24.6	Jan. 21, 1899	6070	*Fish Hawk*	1♂	21133	*acuta.*
Off St. Kitts	17	17	12	62	46	43	208	fne. gy. S. bk. Sp.	°F 55.25	Jan. 14, 1879	148	*Blake*	1♂	2728, M.C.Z.	*acuta.* Identified by A. M. E.
Off Martinique	14	26	18	60	55	00	170	fne. S	49	Feb. 10, 1879	206	do	1♂	2709, M.C.Z.	*acuta.*

NOTE.—In the column "Remarks" the subspecific classification is indicated for only those specimens which are now in hand. Many of the lots listed have been distributed as exchanges, duplicates, or returned specimens.

EUPROGNATHA GRACILIPES A. Milne Edwards

Plate 34, figs. 3 and 4

Euprognatha gracilipes A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 184 (*Euprognata*); 1879, pl. 35, figs. 3 and 3*a* (type-locality, lat. 23° 32′ N., long. 88° 05′ W., 95 fathoms; cotypes, Cat. No. 2881, M. C. Z.); Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 7.—RATHBUN, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 56; Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 58.—A. MILNE EDWARDS and BOUVIER, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 375, pl. 11, fig. 2.

Diagnosis.—Antennal spines nearly or quite as advanced as the front and subparallel to each other. Interantennular spine short. Regions surmounted by a spine. Sternum forming a wide crenate border around the posterior portion of the carapace.

Description.—Branchial region less swollen and hepatic region more prominent than in *E. rastellifera*. Carapace densely granulous, the granules of varying size and intermixed with tubercles, of which there are five in a transverse row on gastric region. Gastric, cardiac, and branchial regions tipped with a cylindrical spine; a smaller abdominal spine. Hepatic margin with a stout spine. Margins of branchial region and pterygostomian ridge armed with smaller spines and tubercles. Front having a deep median groove and terminating in two small triangulate teeth; spines of basal antennal article slender, equaling or not quite reaching front; interantennal spine very short. Supraorbital arches very thick and well marked, tipped with a spine directed diagonally forward and outward. Postorbital spines also much more oblique than in *E. rastellifera*. A wide prominent lobe diagonally across sides

Material examined of Euprognatha gracilipes

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
					°F						
Florida Keys	Sand Key, S. by E.		85					J. B. Henderson	1♂	55491	
Do	Sand Key, S.		85					do	1♀	55490	
	° ′ ″	° ′ ″									
Gulf of Mexico (Yucatan Bank).	23 32 00	88 05 00	95			1877–78	32	*Blake*	2	2881, M.C.Z.	Cotypes.
Off Havana, Cuba	23 10 39	82 20 21	201	Co		Jan. 19, 1885	2342	*Albatross*	1♀	18112	
Do	23 10 31	82 19 55	114	Co		Jan. 17, 1885	2331	do	1♂	9504	
Do	23 10 48	82 18 52	157	Co		Jan. 19, 1885	2336	do	1♂	9509	
Do	23 10 39	82 18 48	130	fne. Co		Jan. 17, 1885	2320	do	2♂	9483	
Do	23 10 54	82 17 45	115	Co		do	2322	do	2♀	18111	
Do	Morro Castle bearing SW. by W., about 2½ miles.		200			May 26, 1893	8½	State Univ. Iowa Exped.	5♂ 1♀	Mus. S. U. I.	
Mayaguez Harbor, Porto Rico.	Point del Algarrobo, E., 2¾ miles.		75–76	rky. S. Co	68.5	Jan. 20, 1899	6063	*Fish Hawk*	1♂	24134	
Do	Point del Algarrobo, E. by N. ½ N., 5¾ miles.		97–120	Co	°C 24	do	6067	do	1♂	24132	
Off Frederickstadt, St. Croix	17 37 55	64 54 20	117	R. brk. Sh.	°F 65	Jan. 5, 1879	132	*Blake*	2♀ (1 ovig.) 1	2651, M.C.Z. 2647, M.C.Z.	
Off Barbados	13 11 54	59 38 45	73	Co. S. Sh	70.75	Mar. 9, 1879	290	do	1♀	2584, M.C.Z.	
Do	13 04 50	59 37 40	69	Co. Sh	68	Mar. 6, 1879	278	do	1	2699, M.C.Z.	
Do	13 04 12	59 36 45	76	Co. brk. Sh	64.75	Mar. 5, 1879	272	do	1♂ 2	2753, M.C.Z. 2602, M.C.Z. 2725, M.C.Z.	

of epistome in place of two or three tubercles. Sternum covered with large tubercles. Sternum extended over bases of legs, forming crenate border around posterior portion of carapace. Chelipeds about one and a half times the length of the carapace, granulate; margins of merus with short triangular spines; palms swollen; fingers very slender and gaping, a large triangular tooth not far behind middle of fixed finger. Ambulatory legs also rough with sharp granules, and with tufts of curled hair above.

Measurements.—Male (9504), length of carapace to tip of rostral horn 9, width without spines 7.3 mm.

Range.—Southern part of Gulf of Mexico and West Indies as far as Barbados. Depth, 69 to 201 fathoms.

Variation.—In some small specimens, 3 or 4 mm. long, the carapace is more oblong than in the old, lateral spines stronger, dorsal sternal plates subtriangular (55490, 55491, and 2651), epistomial tooth large, triangular, acute, and merus of legs with a few rows of short spines. This form is figured by A. Milne Edwards, 1879, but not by Bouvier, 1923 (pl. 11, fig. 2). Perhaps two subspecies are involved.

Material examined.—See table, page 102.

EUPROGNATHA BIFIDA Rathbun

Plate 34, figs. 5 and 6

Euprognatha bifida RATHBUN, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 231 (type-locality, Gulf of California, 33 fathoms; holotype, Cat. No. 17335, U.S.N.M.).

Diagnosis.—No interantennular spine. Two spines side by side on intestinal region. An arched lamina at each end of epistome. Pterygostomian spine visible from above.

Description.—Carapace conspicuously and coarsely granulate; a spine on gastric, cardiac, and branchial regions and on first segment of abdomen; two spines on intestinal region. Postocular tooth with slender tip. Frontal teeth small, triangular, subacute. Antennal spines slender, directed obliquely forward, equally advanced with the front; a shallow, subtriangular, interantennular plate without spine. A short spine on orbital arch. Lateral margins spinous; one hepatic spine, two prominent branchial spines, and one spine on pterygostomian ridge, visible in dorsal view just behind the hepatic region.

An oblique arched lamina at each end of epistome. Sternum of male and abdomen of female coarsely granulate; in both a granulate raised ∧-shaped ridge at anterior end of sternum.

Legs covered with spiniform granules, larger on margins of chelipeds. Palm inflated; fingers moderately gaping in proximal three-fourths. First pair of ambulatory legs a little more than twice as long as carapace.

Material examined of Euprognatha bifida

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
West coast of Lower California:	° ′ ″	° ′ ″	*Meters*		°*F*						
Off Cerros Island	27 54 00	115 08 00	33					Scripps Inst.	2♂ 1♂	53955 Scripps Inst.	
Middle of east side of Cerros Island.						Mar. 12, 1911		*Albatross*	1♂ 1♀ 2♂ 1♀	55759 Amer. Mus.	
Gulf of California:			*Fathoms*								
Southeast of Tiburon Island.	28 28 00	112 04 30	29	gy. S.	62.9	Mar. 23, 1889	3014	do	1♀	17336	
Off San Josef Island	24 55 15	110 39 00	33	fne. gy. S. brk. Sh.	64.5	Mar. 16, 1889	3001	do	1♂	17335	Holotype.
Do	24 51 00	110 39 00	40	S. brk. Sh	64	do	2998	do	1♀	17334	

Measurements.—Male (53955), length of carapace to tip of rostral horns 15.3, width without spines 13 mm.

Range.—Both coasts of Lower California, Mexico. Depth, 18 to 40 fathoms.

Material examined.—See table, page 104.

EUPROGNATHA GRANULATA Faxon

Plate 35, figs. 5 and 6

Euprognatha granulata Faxon, Bull. Mus. Comp. Zoöl., vol. 24, 1893, p. 149 (type-locality, near Cocos Island, 52 fathoms; cotypes, Cat. No. 4477, M. C. Z.); Mem. Mus. Comp. Zoöl., vol. 18, 1895, p. 6, pl. 1, figs. 1 and 1*a*.

Diagnosis.—Antennal spine greatly exceeding, and interantennular spine equaling, the rostral horns. Anterior margin of postocular spines laciniated.

Description.—Carapace coarsely granulate; two erect blunt spines in median line, one on gastric, the other on cardiac region; a transverse row of four or five small tubercles in front of gastric spine; a spine near middle of each branchial region, with a smaller lateral spine below and a little in advance of it; the hepatic region bears a short blunt spine on its most prominent part; there are, besides, three or four prominent tubercles on the angle which divides the hepatic and pterygostomian regions. Antennal spine very long, reaching beyond rostral horns; the three horns of the rostrum (interantennular and lateral) are about equal in length; the supraocular spines are well developed and, like the antennal and three rostral spines, are conspicuously granulate. Postocular spines even more coarsely tuberculate; when viewed from above their margins appear laciniate.

Surface of abdomen thickly set with beadlike tubercles; the first segment bears a prominent granulate spine, and there is a rudimentary spine on each of the three following segments.

Chela slender (in female), covered with small tubercles; remaining articles of cheliped and also ambulatory appendages furnished with small spines, tubercles, and scattered curled setae. (After Faxon.)

Measurements.—Female, cotype, length of carapace 7, width 6 mm.

Range.—Known only from the type-locality, Cocos Island, off Bay of Panama.

Material recorded.—Near Cocos Island; lat. 5° 32′ 45″ N., long. 86° 55′ 20″ W.; 52 fathoms; nullipore or rky.; 62.2° F.; February 28, 1891; station 3369, *Albatross;* 2 females, cotypes (Cat. No. 4477, M. C. Z.).

Genus COLLODES Stimpson

Collodes STIMPSON, Ann. Lyc. Nat. Hist. N. Y., vol. 7, 1860, p. 193; type, *C. granosus* Stimpson.—A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 175.—MIERS, Journ. Linn. Soc. London, Zool., vol. 14, 1879, p. 645.—ALCOCK, Journ. Asiat. Soc. Bengal, vol. 64, 1895, p. 189.—RATHBUN, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 55.

Carapace ovate-triangulate. Rostrum short, entire or bifid. Hepatic region convex. Postorbital process usually large, triangular, not close to eye and separated from the supraorbital arch by a deep, open, marginal fissure. Eyes of moderate length, partially retractile. Basal joint of antenna with a terminal tooth or spine and two margins more or less dentate, the inner margin in a plane at right angles to the outer; flagellum longer than rostrum. Merus of outer maxillipeds obcordate, deeply cut on distal margin, strongly produced at outer and inner angles. Chelipeds of moderate length; merus trigonal, curved. Ambulatory legs of moderate length, the first pair a little longer or shorter than the second pair; third pair usually shorter than either; fourth pair the shortest, dactyli very slender.

Abdomen of male with six, of female with five segments. Surface usually hairy, the hairs collecting and retaining particles of mud; upper surface of legs usually furnished with curved hairs, lower surface with long, straight hairs or bristles.

Distributed on the Atlantic coast of America from S. of Marthas Vineyard, Massachusetts (northern limit, lat. 40° 07′ 48″ N., eastern limit, long. 69° 30′ 00″ W.), to Gulf of Mexico (eastern half) and West Indies (as far as Martinique); also from Cape Frio, Brazil, to Gulf of San Matias, Patagonia. Pacific coast of Mexico from Abreojos Point, Lower California, to Cape St. Lucas and into the Gulf of California. Also Malabar coast of India (Alcock).

Bathymetric range, shallow water to 373 fathoms.

KEY TO THE AMERICAN SPECIES OF THE GENUS COLLODES

- A^1. Carapace with median spines.
  - B^1. Rostrum bifid.
    - C^1. Ambulatory legs hairy.
      - D^1. Inner or lower margin of basal antennal article denticulate.
        - E^1. Rostrum narrowed to a spine which has a bifid tip. **tenuirostris**, young, p. 113.
        - E^2. Rostrum not narrowed to a spine, but with two small teeth or spines at tip.
          - F^1. Granules evenly distributed on branchial region. **trispinosus**, p. 107.
          - F^2. Granules of branchial region unequal, divided into two areas by a smooth space---------------- **rostratus**, small, p. 110.
      - D^2. Inner or lower margin of basal antennal article unarmed. Carapace and female abdomen coarsely granulate-------- **granosus**, p. 106.
    - C^2. Ambulatory legs naked---------------------------- **nudus**, p. 110.
  - B^2. Rostrum simple, not bifid.
    - C^1. Rostrum with a terminal spine---------- **tenuirostris**, adult, p. 113.
    - C^2. Rostrum triangular, without terminal spine.
      - D^1. Basal antennal article with inner crest unarmed. **rostratus**, large, p. 110.
      - D^2. Basal antennal article with inner crest armed with three spiniform teeth-- **obesus**, p. 109.
- A^2. Carapace without median spines.
  - B^1. Ambulatory legs not spinous.
    - C^1. Interantennular spine advanced as far as rostrum. Chelipeds slender. **leptocheles**, p. 117.
    - C^2. Interantennular spine not advanced as far as rostrum.
      - D^1. Carapace smooth. Postorbital lobe small------------ **levis**, p. 120.
      - D^2. Carapace granulate or partly so.
        - E^1. Carapace mostly smooth, four tubercles near its center. Male sternum finely granulate-------------------- **tumidus**, p. 121.
        - E^2. Carapace mostly granulate. Male sternum coarsely granulate.
          - F^1. Postorbital lobe of good size. Basal antennal article with conspicuously dentate crests----------------- **robustus**, p. 114.
          - F^2. Postorbital lobe small. Basal antennal article with almost smooth crests------------------------------------- **inermis**, p. 119.
  - B^2. Ambulatory legs spinous. Rostrum short, subtruncate--- **armatus**, p. 122.

ANALOGOUS SPECIES OF COLLODES ON OPPOSITE SIDES OF THE CONTINENT

Atlantic	Pacific
trispinosus.	*granosus.*
rostratus.	*tenuirostris.*
inermis.	*tumidus.*

COLLODES GRANOSUS Stimpson

Plate 36, figs. 1 and 2; plate 217, fig. 1

Collodes granosus Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 194[66], pl. 2, fig. 4 (type-locality, Cape St. Lucas; holotype not extant).—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 177.—Rathbun, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 569.

Diagnosis.—Three median spines; rostrum subtriangular, tip bifid; carapace and female abdomen coarsely granulate.

Description.—Carapace nearly naked, conspicuously granulated, especially on the branchial regions; granules rather large and distinctly prominent. An erect obtuse spine on the gastric region, a larger one on the cardiac region, and one on the first segment of the abdomen. Anterior half of cardiac region and sulci or depressed parts of carapace generally, smooth and glabrous. Rostrum subtriangular, fissured; tip minutely bifid, points tuberculiform. A minute tooth on superior arch of orbit.

Chelipeds of female weak. Ambulatory legs rather depressed, ciliated, dactyli hairy. Margin of female sternum raised around egg-cavity; abdomen strongly indurated, with the outer surface covered with large closely set granules.

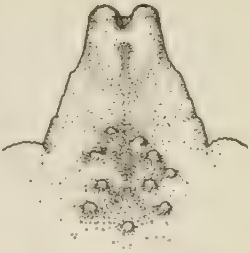

FIG. 31.—COLLODES GRANOSUS, FEMALE (21863), ROSTRUM, × 26.66

Measurements.—Female (55766), length of carapace 9.7, width 8.6, length of first ambulatory leg 15.6 mm.

Range.—Southern and Gulf coasts of Lower California, Mexico. Shallow water to 10 fathoms.

Material examined.—

Cape St. Lucas, Lower California; March 23, 1911; *Albatross;* 1 ovigerous female (55766).

E. of La Paz, in Gulf of California; lat. 24° 11′ 30″ N.; long. 109° 55′ 00″ W.; 10 fathoms; Sh.; April 30, 1888; station 2828, *Albatross;* 1 ovigerous female (21863).

COLLODES TRISPINOSUS Stimpson

Plate 36, figs. 5 and 6

Collodes trispinosus STIMPSON, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 120 (type-localities, off the Quicksands, off Carysfort Reef, and off French Reef, 34 to 50 fathoms; types not extant).—A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 178.

Collodes depressus A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 176; 1879, pl. 32, figs. 4–4*e* (type-localities, near Sombrero, 54 fathoms, and west coast of Florida, 20 fathoms; cotypes from Sombrero and W. Florida in M. C. Z., and from W. Florida in Paris Mus.).—SMITH, Proc. U. S. Nat. Mus., vol. 6, 1883, pp. 5 and 8; Rept. U. S. Fish Commr. for 1885 (1886), p. 621 [17].—RATHBUN, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 52.

Diagnosis.—Three long, slender, median spines. Rostral spines slender, longer than broad. Female abdomen covered with large, depressed granules.

Description.—Carapace hairy, covered with coarse granules everywhere except on the front, the anterior portion of the gastric region, and about the bases of the spines. There is a slender, erect, capitate spine on the gastric, and one on the cardiac region, and a third on the first segment of the abdomen. The rostrum bears two minute

Material examined of Collodes trispinosus

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°F						
North Carolina:											
Off Cape Hatteras	35 35 20	74 58 45	27	crs. gy. S.		Oct. 20, 1884	2296	*Albatross*	3♀ (2 ovig.)	7248	
Do	35 08 30	75 10 00	49	gy. S.		Oct. 17, 1885	2596	do	1♂ 2♀	18100	
Off Cape Lookout	34 38 00	76 12 00	18	fne. gy. S.		Oct. 19, 1885	2607	do	1♀	18952	
South Carolina:											
East of Charleston	32 55 00	77 54 00	79	crs. S. bk. Sp.	59.1	Jan. 3, 1885	2311	do	1♂	18095	
Florida:											
Southwest of Cape San Blas.	29 18 15	85 32 00	25	crs. gy. S. brk. Sh.		Feb. 7, 1885	2370	do	1♂ 2♀	18096	
Do	29 15 30	85 29 30	27	G.		do	2372	do	2♀	18097	
Do	29 11 30	85 29 00	26	S. G. brk. Sh.		do	2374	do	2♀	18098	
Southeast of Apalachicola.	28 46 00	84 49 00	26	crs. S. Co.		Mar. 15, 1885	2406	do	1♂	46985	
South of Apalachicola	28 45 00	85 02 00	30	gy. S. brk. Co.		do	2405	do	4♂ 8♀	9783	
Pepperfish Key Section						Nov. 21, 1901		*Fish Hawk*	1♂ 1♀	46970	
West of Marco	26 00 00	82 57 30	24	fne. S. bk. Sp. brk. Sh.		Mar. 19, 1885	2413	*Albatross*	2♂	18099	
Do	25 54 00	83 20 00	31	gy. S. bk. Sp. brk. Sh.	69	Mar. 15, 1889	5092	*Grampus*	1♂	20118	
West Florida			20					*Bache*, W. Stimpson.	1	2948, M.C.Z.	Cotype of *C. depressus.*
Tortugas reefs			4					J. B. Henderson	1♂ 2♀	46971	
Tortugas			16					do	1 ovig. ♀	47075	
Off Key West	Sand Key Light bearing W. NW., Key West Light bearing N.		60			June 19, 1893	24	State Univ. Iowa Exped.	2♂ 2♀	Mus. S. U. I.	
Off Sombrero			54			Apr. 2, ——		*Bache*	1	2653, M.C.Z.	Cotype of *C. depressus.*

and usually well-separated horns. The basal article of the antenna is so twisted that the terminal spinule of the four or five on the outer margin is in the same horizontal plane as the rostrum; the laminate crest near the inner margin ends in a large tooth. A short interantennular spine present. A granule on upper orbital border. Postorbital tooth slender. Sternum of male very finely granulate; terminal or seventh article of abdomen elongate-triangular. Abdomen of female furnished with coarse but depressed granules.

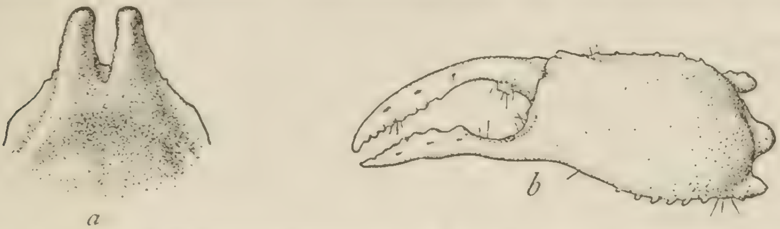

FIG. 32.—COLLODES TRISPINOSUS, MALE (9783). *a.* ROSTRUM, × 16. *b.* LEFT CHELA, × 6.66

Chelipeds of male moderately stout; palm thick, smooth outside; margins of merus and palm and surface of carpus spinulous; fingers widely gaping, a triangular tooth near middle of fixed finger, a very shallow, molariform tooth near base of dactylus. Ambulatory legs long; dactyli about as long as the preceding article.

Measurements.—Male (9783), length of carapace 14, width 11.5, length of first leg 28.7 mm. Female (9783), length of carapace 12, width 9.7 mm.

Range.—North and South Carolina; Florida, gulf coast, and keys from Tortugas to Carysfort. Depth, 4 to 82 fathoms.

Material examined.—See table, page 108.

COLLODES OBESUS A. Milne Edwards

Plate 36, figs. 3 and 4; plate 217, figs. 2–5

Collodes obesus A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 177; 1879, pl. 32, figs. 3–3*d* (type-locality, near Sombrero, Florida Strait, 54 fathoms; holotype in M. C. Z.).

Diagnosis.—Carapace narrow, entirely covered with granules. Postorbital lobes large and turned outward, not forward.

Description (after A. Milne Edwards).—Near *trispinosus.* Distinguished by the form of the carapace which is longer and narrower, but wider across the postorbital lobes. Surface entirely covered with large flattened granules. Postorbital lobes broadly triangular and turned directly outward, the anterior margin being quite transverse. Median spines as in *trispinosus.* Inner, lower crest of basal antennal article ornamented with three large spiniform teeth; the outer edge bears three teeth followed by small granules. Chelipeds

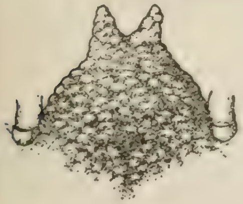

FIG. 33.—COLLODES OBESUS FEMALE (46984), ROSTRUM OF CARAPACE 11 MM. LONG

smooth, fingers finely denticulate on prehensile edges and, as in the female of *trispinosus,* without a large tooth. Ambulatory legs short and hairy.

Measurements.—Female, holotype, length of carapace 13, width 9 mm.

Range.—Sombrero, Florida Strait, 54 fathoms.

Material examined.—A somewhat smaller female in the National Museum is placed here with some reserve, as it has, at the end of the rostrum, two small teeth. The specimen was taken by the *Fish Hawk* in the Gulf Stream off Cape Florida, one mile E. ¼ N. of Fowey Rocks Light, 50 fathoms, fine gray sand, coral, temp. 69° F., March 30, 1903, station 7516 (Cat. No. 46984). It has not been compared with the holotype.

Remarks.—For occasional bifurcation of an entire rostrum see under *C. rostratus* and *tenuirostris.*

COLLODES NUDUS Stimpson

Collodes nudus Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 120 (type-locality, off Carysfort Reef, 40 fathoms; holotype not extant).—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 178.

Diagnosis.—Carapace and feet naked. Dactyli of ambulatories spinous on inner edge.

Description (after Stimpson).—Allied to *C. granosus* and *C. trispinosus,* having three spines on the dorsum similar in shape and position to the spines of those species. *C. nudus* differs, however, in its naked carapace and feet and in the less numerous and prominent granulated tubercles on the dorsal surface. The carapace is also much broader anteriorly. The ambulatory legs of the second pair are rather longer than those of the first pair; dactyli of the legs armed with spines along the inner edge.

Measurements.—Male, holotype, length of carapace 0.24 inch (6 mm.), width 0.18 inch (4.6 mm.), length of first ambulatory leg 0.45 inch (11.4 mm.).

Range.—Known only from the type male from off Carysfort Reef, Florida, lat. 25° 13′ 40″ N.; long. 80° 10′ 45″ W.; 40 fathoms; sand; March 21, 1869; station 7, U. S. Coast Survey steamer *Bibb.*

COLLODES ROSTRATUS A. Milne Edwards

Plate 36, figs. 7 and 8

Collodes rostratus A. Milne Edwards, Crust. Rég. Mex., 1878, p. 179; 1879, pl. 32, figs. 2–2*d* (type-locality, lat. 41° 40′ S., long. 63° 13′ W., [30 fathoms, *Hassler,* Mar. 7, 1872]; holotype, Cat. No. 2962, M. C. Z.).—Rathbun, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 569.

Diagnosis.—Rostrum narrow, hood-shaped, without terminal spine. Postorbital lobe broad, directed strongly forward, then outward. Fingers of adult male narrowly gaping.

Material examined of Collodes rostratus

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude S.	Longitude W.									
	° ′ ″	° ′ ″			°*F*						
Brazil: Off Cape Frio			35			Jan. 22, 1872	236P	*Hassler*	2♀	2057, M. C. Z.	Var. with rostrum slightly bifid.
Argentina: Off Rio de la Plata	36 47 00	56 23 00	10.5	S. brk. Sh.		Jan. 12, 1888	2766	*Albatross*	1♂	21864	
Patagonia:											
East of Colorado River	40 03 00	58 56 00	52	fne. dk. S.		Jan. 13, 1888	2767	do	1♀	21865	
Entrance of Gulf of San Matias.	41 40 00	63 13 00	30			Mar. 7, 1872	246P	*Hassler*	1♂	2962, M. C. Z.	Holotype.
									2♂ 2♀ (1 ovig)	2019, M. C. Z.	
									1 immat. ♀	2565, M. C. Z.	Var. with rostrum slightly bifid.

Material examined of Collodes tenuirostris

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°*F*						
West coast of Mexico:											
Off Abreojos Point, Lower California.	26 14 00	113 13 00	48	yl. M.	53.9	May 3, 1888	2834	*Albatross*	8♂ 9♀	21867	
Magdalena Bay, Lower California.	24 38 00	112 17 30	51	gn. M.		May 2, 1888	2833	do	2♀	21866	
Gulf of California	29 19 00	112 50 00	145	br. M.	54.9	Mar. 24, 1889	3015	do	1♂	17332	
Do	30 16 00	113 05 00	36	gy. S. brk. Sh.	63.3	do	3018	do	2♂	17333	Holotype.
Do	29 30 00	112 40 00	45			1880–1882		Lieut.-Comdr. H. E. Nichols, U. S. N.	2 y. ♂, 2 y. ♀	18101	

Description.—Carapace covered with curved hairs and coarse granulation except in the deep interregional furrows which are smooth; granules less numerous on gastric and frontal regions. Spines of gastric and cardiac regions stout, spine of first abdominal segment slenderer. Rostrum narrow, advanced, hood-shaped, edge arcuate, a median keel, and a very short, closed, median incision at the end in the male. In the female the rostrum is narrower and without incision. In the type male described by Edwards the rostrum was more pointed and not incised. Basal antennal article long and narrow, inner lamina not deep, subentire, ending in a lobe, outer margin obscurely denticulate, terminal lobe elongate. Postorbital lobe large, advanced, its margins parallel in basal half, its inner margin then becoming transverse. Male sternum and female abdomen covered with fine granules.

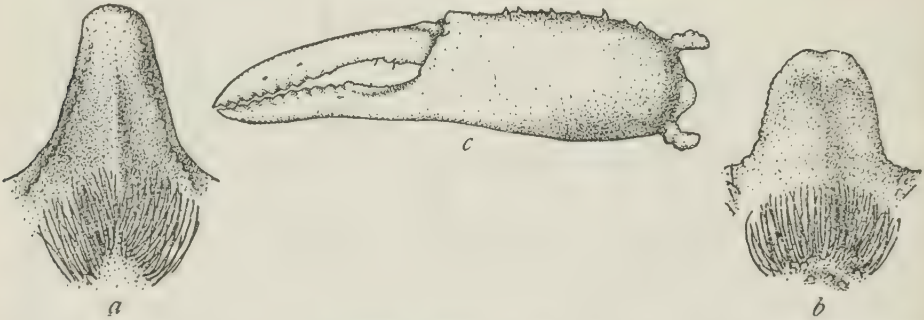

FIG. 34.—COLLODES ROSTRATUS. *a.* ROSTRUM OF FEMALE (21865), × 16.66. *b.* ROSTRUM OF MALE (21864) × 13.33. *c.* LEFT CHELA OF MALE (21864), × 10.66

Chelipeds feeble, merus and carpus and upper surface of manus finely roughened, fingers gaping for two-thirds their length, basal two-fifths of fixed finger hollowed on its prehensile edge in male.

Variation.—Three small specimens, one of which is from the type-locality, differ from typical *rostratus* in having the rostrum split for a short distance into two small horns. As the other characters are so close to *rostratus*, it is very probable that the bifid form is the early form and that the horns disappear with age leaving an entire rostrum, which may show slight indication of a bilobed tip.

Measurements.—Male (21864), length of carapace 11.6, width 8.4, length of cheliped 12, length of first ambulatory leg 20 mm. Female (21865), length of carapace 11.7, width 9 mm. Male (2049), length 20.1, width 15.6 mm. Female (2057), length 7, width 5.2 mm.

Range.—From Cape Frio, Brazil, to Gulf of San Matias, Patagonia. Depth, 10½ to 52 fathoms.

Material examined.—See table, page 111.

COLLODES TENUIROSTRIS Rathbun

Plate 37

Collodes tenuirostris Rathbun, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 230 (type-locality, Gulf of California, lat. 30° 16′ N., long. 113° 05′ W., 36 fathoms; holotype, Cat. No. 17333, U. S. N. M.); Proc. U. S. Nat. Mus., vol. 21, 1898, p. 569.

Collodes, doubtful species, Rathbun, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 53.

Diagnosis.—Rostrum terminating in a slender spine; in addition, three median spines on carapace. Chelipeds slender.

Description.—Carapace slightly pubescent; unevenly granulate with unequal granules, the largest ones on the summit of the branchial regions, which have the greatest number of granules; a few small granules on cardiac and gastric regions; more on the hepatic regions; lateral and posterior margins covered with small granules. Four median capitate spines, one at end of rostrum, one gastric, one cardiac, and one directed obliquely backward and upward on the first abdominal segment. In young specimens the rostral spine is bifid at tip; and this bifurcation sometimes persists in older specimens up to 12 mm. in carapace length. A supraorbital tubercle; a rather broad postorbital lobe directed obliquely forward. Basal antennal segment with a prominent inner lamina ending in a lobe and an outer margin cut into numerous denticles. The male sternum is granulate on the cheliped segment near the abdomen and especially on the most protuberant parts; granules few on other segments except close to abdominal cavity. Female abdomen roughened with numerous but separated granules.

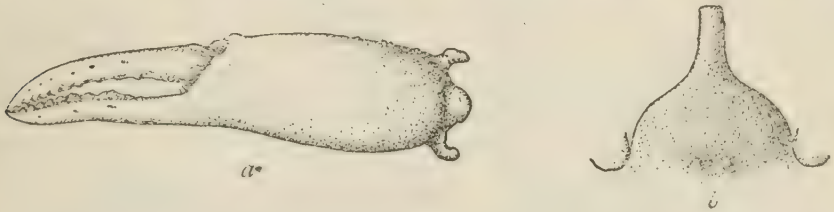

Fig. 35.—Collodes tenuirostris, male (21867), × 8. *a*. Left chela. *b*. Rostrum

Chelipeds slender; outer margin of merus armed with about eight stout spinules, other margins finely spinulous, as is also the inner margin of the carpus; manus nearly smooth; fingers narrowly gaping in basal half. Legs long-hairy, the hairs retaining large quantities of mud.

Measurements.—Male (21867), length of carapace 18.8, width 14.7, length of cheliped 20.6, of first ambulatory leg 35.7 mm. Female (21867), length of carapace 17, width 13.4 mm.

Range.—West coast of Lower California and Gulf of California. Depth, 36 to 145 fathoms.

Material examined.—See table, page 111.

COLLODES ROBUSTUS Smith

Plate 29

Collodes depressus SMITH, Proc. U. S. Nat. Mus., vol. 3, 1880 (1881), p. 414; not *C. depressus* A. Milne Edwards, 1878, nor Smith, 1883 or 1886.

Collodes robustus SMITH, Proc. U. S. Nat. Mus., vol. 6, 1883, p. 5 (type-localities, 21 stations between off Marthas Vineyard and off Chesapeake Bay, 56 to 156 fathoms; cotypes in U.S.N.M. and Y.U.M.; largest cotypes, station 940, Cat. No. 18763, U.S.N.M.); Rept. U. S. Fish Commr. for 1882 (1884), p. 347, pl. 1, figs. 1, 1*a*, 2-2*b*; for 1885 (1886), p. 621 [17].

Diagnosis.—Carapace granulate, without median spines. Rostrum two-spined. Palms of chelipeds dilated.

Description.—Larger than *C. trispinosus*, carapace longer and hepatic regions more protuberant. The median spines of *trispinosus* are replaced by small tubercles which, in full grown specimens, are scarcely larger than the granules of the rest of the surface. Granules less abundant on the gastric region than elsewhere. Rostrum wider than in *trispinosus*, with two short horns more widely separated at the tips. Postorbital tooth triangulate, broader than in *trispinosus*, slightly exceeding the eyes in adults. Sternum of male coarsely granulate. Margins of basal antennal article dentate. Interantennular spine long and slender.

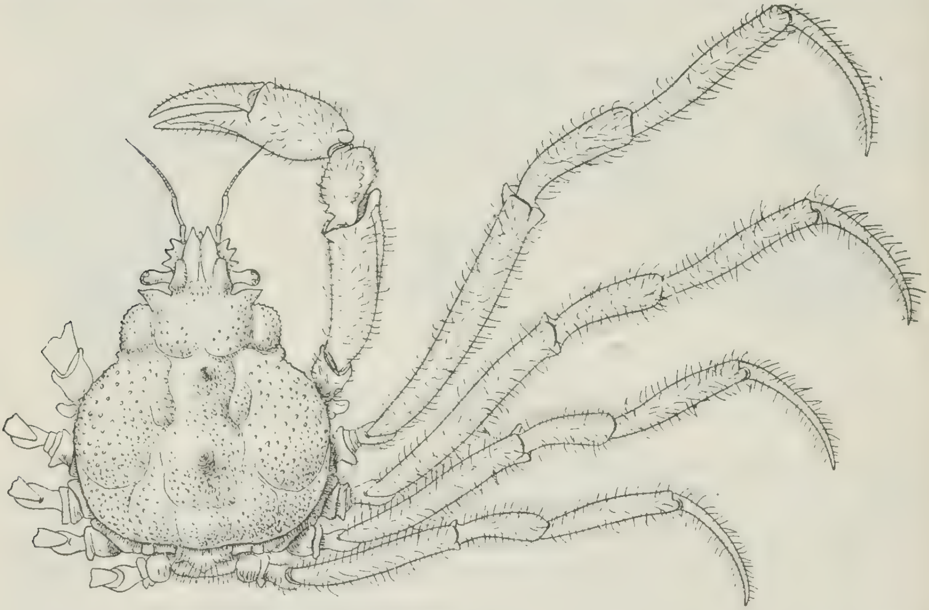

FIG. 36.—COLLODES ROBUSTUS, MALE, STATION 940, FISH HAWK, DORSAL VIEW, × 1.5. (AFTER SMITH)

Chelipeds much as in *trispinosus;* in addition to the enlarged teeth on the fingers in *trispinosus*, there is in *robustus* a tooth on the dactylus opposite the one on the immovable finger. Ambulatory legs long-hairy.

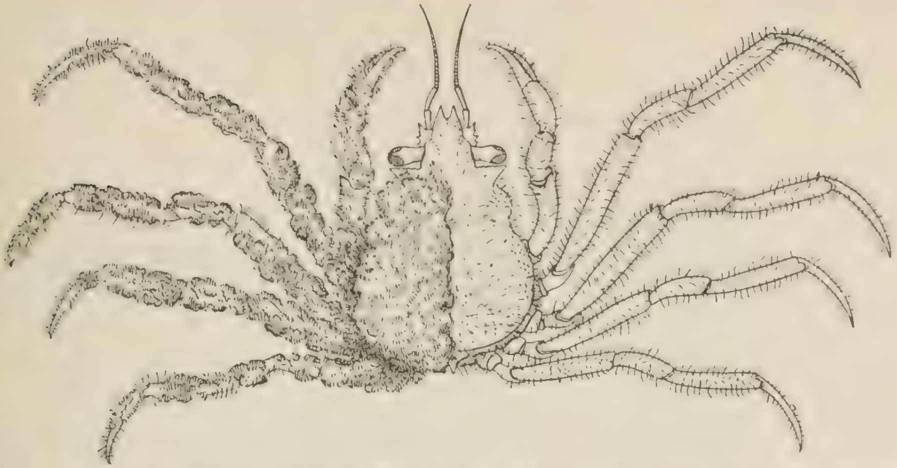

FIG. 37.—COLLODES ROBUSTUS, YOUNG MALE, STATION 1036, FISH HAWK, DORSAL VIEW, HAIR REMOVED FROM ONE SIDE, × 2.9. (AFTER SMITH)

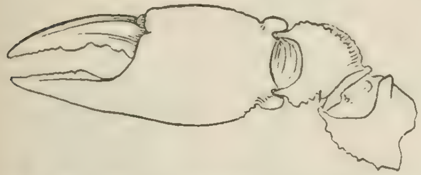

FIG. 38.—COLLODES ROBUSTUS, MALE, STATION 940, FISH HAWK, RIGHT CHELA, × 1. (AFTER SMITH)

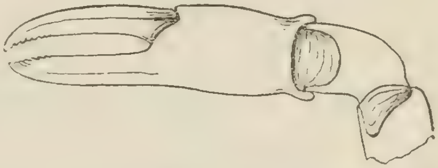

FIG. 39.—COLLODES ROBUSTUS, YOUNG MALE, STATION 1036, FISH HAWK, LEFT CHELA, × 8. (AFTER SMITH)

Color.—Yellowish, in alcohol.

Measurements.—Male (18763), length of carapace 27, width 21.2, length of first ambulatory leg 68 mm.

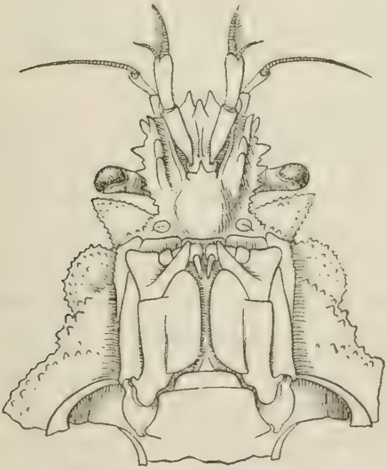

FIG. 40.—COLLODES ROBUSTUS, MALE STATION 940, FISH HAWK, VENTRAL VIEW OF ANTERIOR HALF, × 2.66. (AFTER SMITH)

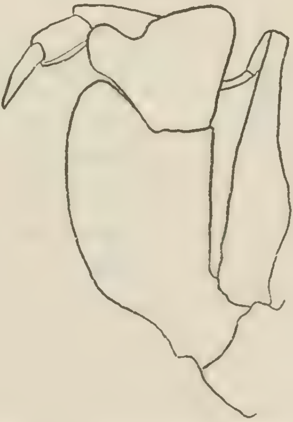

FIG. 41.—COLLODES ROBUSTUS (5775), MAXILLIPED, × 5.92

Material examined of Collodes robustus

Locality	Bearings						Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.			Longitude W.											
	°	′	″	°	′	″			°F						
Massachusetts:															
South of Nantucket	39	58	00	69	30	00	94	S.	51	Sept. 14, 1881	1036	*Fish Hawk*	4	18764	
Do	39	54	00	69	51	30	134	hrd. S. Sponges	52	Aug. 4, 1881	940	do	21 10 6	18763 3288, M. C. Z Y. U. M	Cotypes. Do.
Do	40	01	00	69	56	00	79	hrd. S. M.	52	do	941	do	10	Y. U. M	
Do	40	00	00	70	06	00	93	S. Sh.	66	Sept. 21, 1881	1040	do	4♀	18768	
Do	39	58	00	70	06	00	146	S. Sh.	47	do	1038	do	1♂	Y. U. M	
South of Marthas Vineyard.	40	05	00	70	23	00	65	Compact fne. S. M.	68	Sept. 4, 1880	865	do	1♂ 1♀ ovig.	18766	
Do	40	02	54	70	23	40	115	M. fne. S.	49	do	871	do	8♂ 1♀	18767	
Do	40	05	39	70	23	52	86	S. G. Sh. Sponge.	50.5	do	872	do	1♂	Y. U. M	
Do	40	03	00	70	31	00	100	yl. M.	52	Aug. 23, 1881	949	do	5♂ 5♀ ovig.	18765	
Do	40	07	00	70	32	00	71	S. Sh. M.	52	do	950	do	2♂ 2♀ ovig.	5775	
Do	40	07	48	70	43	54	67	gn. M.	52	July 16, 1881	921	do	4♂ 1♀	4566	
Do	40	03	48	70	45	54	69	gn. M. S.	52	do	922	do	2♂	4567	
Do	39	55	00	70	54	15	142.5	M.	52	Sept. 13, 1880	878	do	1♂ 1♀ ovig.	Y. U. M	
Do	40	00	00	70	57	00	85	sft. sticky M.	51	do	874	do	1♂ 5	40760 Y. U. M	
Do	40	02	00	70	57	00	100	sft. sticky M.	51	do	873	do	3♂ 3♀	Y. U. M	
Do	39	57	00	70	57	30	126	sft. sticky M.	53	do	875	do	1♀	Y. U. M	
Delaware:															
East of Delaware Bay	38	39	00	73	11	00	130	S.	49	Oct. 10, 1881	1043	do	3♂ 2♂	4844 Y. U. M	
Do	38	33	00	73	18	00	104	S.	51	do	1046	do	2	Y. U. M	
Do	38	31	00	73	21	00	156	S.	49	do	1047	do	1♂	4845	
Virginia:															
East of Virginia	37	36	00	74	15	00	179	bu. M. fne. S.	45	May 21, 1883	2021	*Albatross*	4♂	5746	
Do	37	26	00	74	19	00	56	S. Sh.	55	Nov. 16, 1880	896	*Fish Hawk*	6♂ 1♀	4832	
Do	37	22	00	74	29	00	57.5	S.	54	do	899	do	6♂ 3	4833 Y. U. M	
Do	37	19	45	74	26	06	102	gn. M. Sh.	51	Mar. 23, 1883	2004	*Albatross*	3♂ 1♀ ovig. 1♀	5518 5528	
Do	37	18	11	74	27	36	82	bu. M. S. brk. Sh.		do	2005	do	7♂ 2♀	5532	
East of mouth of Chesapeake Bay.	37	08	30	74	33	30	85	crs. gy. S. bk. Sp. brk. Sh.	52.5	June 3, 1885	2422	do	2	15152	
Do	37	07	40	74	35	40	70	gn. M. G.	57.9	Oct. 18, 1884	2265	do	10♂ 3♀	7211	
Do	37	07	00	74	34	30	64	fne. gy. S. P.		June 3, 1885	2421	do	11♂	10085	
Do	37	03	20	74	31	40	104	bk. S. M. G.	47.7	Apr. 5, 1885	2420	do	16	9868	
East of Virginia	36	41	05	74	38	53	373	gn. M. fne. S.		May 1, 1883	2014	do	1♂	5600, Y.U.M.	
North Carolina: Northeast of Cape Hatteras.	35	38	00	74	53	00	49	bk. M. brk. Sh.		Oct. 20, 1884	2297	do	1♂ 1♀	8901 7261	

Range.—South of Nantucket, Massachusetts, to off Cape Hatteras, North Carolina. Depth 49 to 373 fathoms.

Material examined.—See table, page 116.

COLLODES LEPTOCHELES Rathbun

Plate 38, figs. 5 and 6

> *Collodes leptocheles* RATHBUN, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 53 (type-locality, Gulf of Mexico, 68 to 169 fathoms; holotype, Cat. No. 9748, U.S.N.M.).

Diagnosis.—No median spines. Carapace granulate. Rostrum bidentate. Spine on fifth abdominal segment. Chelipeds slender.

Description.—Allied to *C. robustus;* surface granulate, without median spines. Rostrum divided by a V-shaped notch into two acute teeth shorter than in *robustus,* their outer margin convex Interantennular spine rather slender, extending a little beyond the rostrum. Postorbital tooth long, exceeding the eyes, and pointing directly outward.

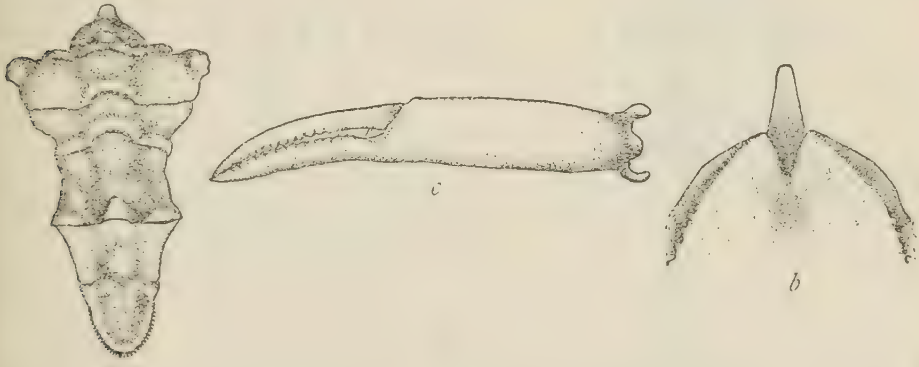

FIG. 42.—COLLODES LEPTOCHELES, MALE (9748). *a.* ABDOMEN, × 4.66. *b.* ROSTRUM, × 12.66. *c.* LEFT CHELA, × 7.33

Abdomen of male broader than in *robustus,* constricted at fifth segment, which bears a long spine directed downward and backward; a sharp median tubercle on first segment; tips of first pair of appendages more slender than in *robustus.* A small spine is present on the fifth segment in the female.

Inner margin of basal article of antenna very prominent, cut into three coarse spiniform teeth; outer margin also dentate with four or five teeth including the one at the extremity. Chelipeds weak in both sexes and about as long as carapace; hand slender, fingers as long as palm and very narrowly gaping in their basal portion. First and second pairs of legs nearly equal in length, second often exceeding first, about twice as long as carapace; dactylus of last two pairs longer than propodus.

Color.—In alcohol, a pale ecru.

Material examined of Collodes leptocheles

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°*F*						
Gulf of Mexico:											
South of Alabama	29 14 30	88 09 30	68	gy. M.		Feb. 11, 1885	2378	*Albatross*	1♀	18101	
Off Florida	28 41 00	86 07 00	169	gy. M.		Mar. 14, 1885	2400	do	5♂ 4♀	9748	1 male is holotype.
Do	28 38 30	85 52 30	142	gn. M. brk. Sh.		do	2401	do	9♂ 10♀	9751	
Do	28 36 00	85 33 30	111	gy. M.		do	2402	do	1♂	18102	
Do	28 42 30	85 29 00	88	gy. M.		Mar. 15, 1885	2403	do	1♂	18103	

Material examined of Collodes levis

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
Porto Rico:					°*C*						
Off Vieques Island	Culebrita Lighthouse, NE. by N., 10 miles.		15	Co.	26	Feb. 10, 1899	6091	*Fish Hawk*	3♀	23772	1 is holotype.
Do	Culebrita Lighthouse, NE. ⅜ E., 7¼ miles.		16	Co.	25. 2	do	6092	do	1♀	24085	
Off Culebra Island	Point Mula Lighthouse, SW. ½ S., 8½ miles.		14. 75	Co. S.	25. 5	Feb. 8, 1899	6086	do	1♂	24083	
Do	Point Mula Lighthouse, SW. ¼ S., 10½ miles.		15. 25	Co. S.	25	do	6087	do	1♀	24084	

Measurements.—Male, holotype, length of carapace 16.5, width 12.7 mm. Female (18101), length 17.5, width 13.2 mm.

Range.—Gulf of Mexico; 68 to 169 fathoms.

Material examined.—See table, page 118.

COLLODES INERMIS A. Milne Edwards

Plate 38, figs. 3 and 4

Collodes inermis A. Milne Edwards, Crust. Rég. Mex., 1878, p. 179; 1879, pl. 32, figs. 1–1c (type-locality, coast of Brazil, 17 fathoms, lat. 11° 49′ S., long. 37° 27′ W.; holotype, Cat. No. 2949, M. C. Z.).—Aurivillius, K. Sv. Vet.-Akad. Handl., vol. 23, 1889, p. 36.—Rathbun, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 56.

Diagnosis.—Postorbital lobe small. No spines on carapace. Carapace partially granulate. Two very small rostral teeth. Fingers of male widely gaping.

Description.—Carapace depressed; partially granulate, especially along the posterior margin, on the summit of the cardiac region and the outer two-thirds or more of the branchial regions; a few granules on the front, on the middle of the gastric region and on the outer margin of the hepatic region. Amount of granulation variable. Rostrum bluntly triangular, tip cut into two minute teeth. Postorbital lobes small, directed straight outward and much exceeded by the eyes. Sternum of male coarsely granulate except between the chelipeds; abdomen nearly smooth save for the boss at either side of the third segment and the spine or tubercle on the first segment. Abdomen of female covered with depressed granules.

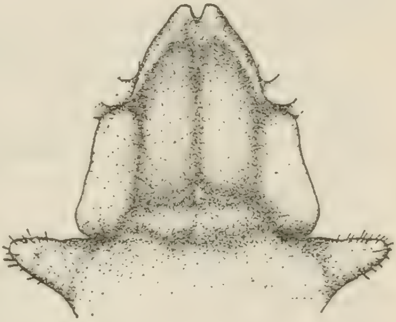

Fig. 43.—Collodes inermis, male (24142), frontal and orbital region, × 15

Basal article of antenna with margins almost unarmed, the outer one finely roughened, the inner margin not exceeded by the outer one. Merus of chelipeds with denticulate margins, chela dilated in male, fingers widely gaping for their proximal fifth, this portion of the fixed finger being curved downward and excavate, a triangular tooth at end of gape; a broad, low tooth projects from the dactylus into the middle of the gape.

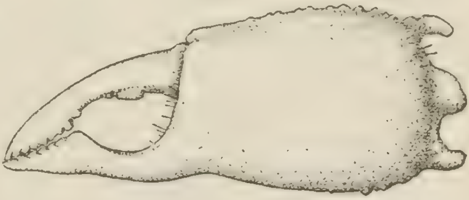

Fig. 44.—Collodes inermis, male (24142), left chela, × 13.33

Color.—Probably dark, as the paratype after long preservation showed traces of dark blue and olive; chelipeds green.

Measurements.—Male, holotype (2949), length 7.5, width 5.5 mm. Male (24142), length 8.7, width 7 mm.

Range.—Porto Rico; Martinique; Brazil, north of Bahia. Depth, 5½ to 18 fathoms.

Material examined.—

Porto Rico; 1899; *Fish Hawk:* Mayaguez Harbor; Black buoy entrance, N. by W. ½ W., ½ mile; 12 to 18 fathoms; S. M.; temp. 26° C.; January 20; station 6061; 1 male, 2 females (24142). Off Porto Real; Point Guaniquilla, S. ¼ E., 2 miles; 8½ fathoms; Co. S.; temp. 26° C.; January 25; station 6074; 1 female (24143).

Off coast of Brazil, North of Bahia; lat. 11° 49′ S.; long. 37° 27′ W.; 17 fathoms; January 18, 1872; U. S. C. S. S. *Hassler;* 1 male, figured type (2949, M. C. Z.).

COLLODES LEVIS Rathbun

Plate 38, figs. 1 and 2

Collodes levis Rathbun, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 56, text-fig. 9 (type-locality, off Vieques, 15 fathoms; holotype, Cat. No. 23772, U.S.N.M.).

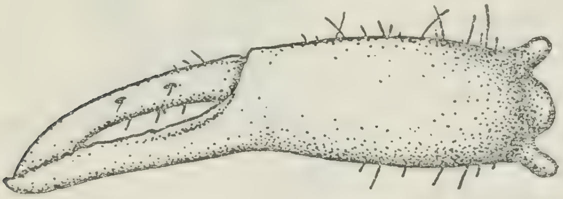

Fig. 45.—Collodes levis, male (24083), left chela, × 24

Diagnosis.—Postorbital lobe small. No median spines on carapace or abdomen. Carapace smooth. Two very small rostral teeth.

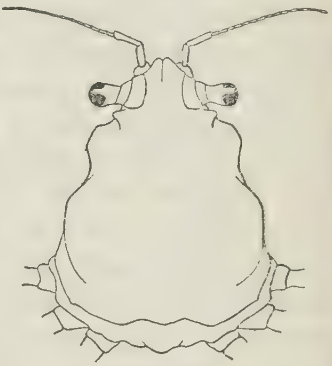

Fig. 46.—Collodes levis, female (23772), dorsal view of carapace, × 2.5. (After Rathbun)

Description.—Carapace narrow, moderately convex, pubescent, smooth, without spines, tubercles, or granules. Rostrum medially sulcate, tip minutely emarginate forming two small, blunt lobes or teeth. Interantennular tooth little developed. Postorbital tooth very small, reaching only about one-third the length of the eyestalk. Male sternum nearly smooth, abdomen smooth in both sexes. The vertical plate along the inner margin of the basal antennal article is entire and anteriorly very prominent; outer margin feebly denticulate. The only male known is immature; its chela is scarcely more enlarged than in the female.

Measurements.—Male (24083), length of carapace 5.4, width 4 mm.; female (23772), length 5.5, width 4.6 mm.

Range.—Porto Rico; 14¾ to 16 fathoms.

Material examined.—See table, page 118.

COLLODES TUMIDUS Rathbun

Plate 40, figs. 1 and 2; plate 218, fig. 5

Collodes tumidus RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 569, pl. 41, fig. 1 (type-locality, Magdalena Bay, Lower California, 12 fathoms; holotype, Cat. No. 21571, U. S. N. M.).

Diagnosis.—Carapace mostly smooth; four elevated tubercles forming a cross near the middle. Postorbital lobe curved. Male sternum finely granulate.

Description.—Carapace granulate along the posterior and lateral margins, the granules large on the hepatic region and reaching forward a little on the branchial and cardiac regions; a few granules also between the orbits. Four tubercles near the middle of the carapace at the most elevated portions, one gastric, one cardiac, the other two at the inner angles of the branchial regions. Otherwise the central part of the carapace is smooth. Front bidentate, the teeth triangular, blunt, and separated by a space subequal to either tooth. Postorbital tooth slightly curved, convex forward, shorter than the eye. Basal antennal article broad, inner or lower edge entire, outer edge unevenly dentate, upper and lower terminal lobes equally advanced. Male sternum and elevations of first three abdominal segments finely granulate; otherwise the abdomen of both sexes is nearly smooth.

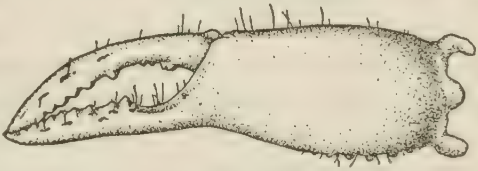

FIG. 47.—COLLODES TUMIDUS, MALE (21571), LEFT CHELA, × 9.33

Chelipeds of adult male slightly enlarged. The palm narrows perceptibly near the distal end. Fingers gaping to near the tips, dactylus with an enlarged tooth near the base, fixed finger with a similar tooth marking the proximal third. Ambulatory legs rather stout.

Measurements.—Male, holotype, length of carapace 11.6, width 9.5 mm.

Range.—Lower California, Mexico; 10 to 12 fathoms.

Material examined.—

Middle of east side of Cerros Island; March 12, 1911; *Albatross;* 1 young female (56221).

Magdalena Bay, Lower California; lat. 24° 32′ 00″ N.; long. 111° 59′ 00″ W.; 12 fathoms; fne. gy. S.; May 2, 1888; station 2831, *Albatross;* 1 male, holotype (21571).

Southern part of Gulf of California; lat. 24° 11′ 30″ N.; long. 109° 55′ 00″ W.; 10 fathoms; Sh.; April 30, 1888; station 2828, *Albatross;* 1 female (21868).

COLLODES ARMATUS Rathbun

Plate 217, fig. 6

Collodes armatus Rathbun, Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 252, pl. 2, fig. 1 (type-locality, off Havana; holotype in Mus. S. U. I).

Diagnosis.—Carapace smooth and unarmed above. Rostrum short, subtruncate. Ambulatory legs spinous beneath.

Description.—Carapace narrow; dorsal surface smooth and shining, nearly naked; cardiac, branchial and gastric regions much swollen; hepatic region depressed and with one or more granules and a spinule on the margin; pterygostomian region with ten or more sharp spines. Front subtruncate, margin slightly excavate, not advanced beyond the antennular fossae, with a deep median sulcus terminating in the interantennular partition which projects slightly forward as a median tooth, not visible in dorsal view. Postorbital tooth triangular, shorter than eyestalk. Abdomen of female with two median tubercles on the coalesced segment; surface covered with curved hairs. Basal antennal article with an acute tooth at antero-external angle; outer margin with four irregular lobes; inner margin with a shallow sinus, anterior angle rounded. Maxillipeds spinulous.

Chelipeds of female slender, margins spinous, largest spines on outer margin of merus and inner margin of carpus. Manus slender, unarmed distally; fingers nearly as long as palm, in contact. Legs long, slender, and of nearly equal length, margined with long, straight bristles set in short, stout, cylindrical sockets, which remain as hard, beadlike projections when the bristles are removed; a few curved hairs present; the first two pairs of legs bear sharp spines underneath.

Measurements.—Female, holotype, length of carapace 9, width 6.8 mm.

Material examined.—The type female is the only specimen known; it was taken in 1893 off Havana, Cuba, by the State University of Iowa Expedition, and is deposited in the museum of that university.

Genus BATRACHONOTUS Stimpson

Batrachonotus Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 122; type, *B. fragosus* Stimpson.—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 180.—Rathbun, Bull. U. S. Fish Comm., vol. 20 for 1900, pt. 2 (1901), p. 56.

Carapace triangular, broadly expanded behind, especially in male; surface rough with granulations; gastric, cardiac and branchial regions strongly protuberant; hepatic region angular, approximating the postorbital tooth; cervical depressions deep and broad, giving carapace a superior outline much like that of a frog's back. Rostrum very short, scarcely projecting beyond the walls of antennulary fossae, slightly emarginated at the middle. Basal joint of antennae with dentate margins and a small tooth or spine at anterior extremity. Postorbital tooth or spine small, close to eye. Merus of outer maxillipeds broad, with prominent outer and inner front angles. Last two segments of abdomen in male and last three in female anchylosed. Ambulatory legs of first pair very long in male, more than twice as long as those of second pair; posterior pairs very short. In the female all the ambulatory legs are short. Dactyli rather long.

This genus is very closely allied to *Collodes*, from which it differs chiefly in its carapace, broader posteriorly, its smaller postorbital tooth, in the shape of the hepatic region, which is angular in outline instead of rounded, the anterior margin being at right angles to median line, in the merus of the maxillipeds, which has the inner lobe more produced and transverse than in *Collodes*, and in the great length of the first ambulatory legs of the male.

Found only in American waters, between Cape Hatteras, North Carolina, and Rio de Janeiro, Brazil, on the Atlantic side, and on the coasts of Lower California, Mexico, on the Pacific side.

KEY TO THE SPECIES OF THE GENUS BATRACHONOTUS

A^1. Postorbital tooth small, not nearly reaching end of eye. A large tooth on immovable finger of male------------------------------**fragosus**, p. 123.

A^2. Postorbital tooth larger, reaching or nearly reaching end of eye. No large tooth on immovable finger of male--------------------**nicholsi**, p. 127.

Analogous species on opposite sides of the continent: *fragosus* (Atlantic); *nicholsi* (Pacific).

BATRACHONOTUS FRAGOSUS Stimpson

Plate 39, figs. 1–4.

Gripus januarii Krøyer, *nomen nudum*, on label in Copenhagen Museum.

Batrachonotus fragosus Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 122 (type-locality, south of Tortugas, lat. 24° 36′ 40″ N., long. 83° 02′ 20″ W., 16 fathoms; type not extant).—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 180.—Rathbun, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 54; Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 57.

Batrachonotus brasiliensis Rathbun, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 54 (type-locality, Rio de Janeiro; holotype, Cat. No. 19943, U. S. N. M.); Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 57.

Diagnosis.—Postorbital tooth small, not nearly reaching end of eye. A large tooth at middle of immovable finger of male. Antennal spines subparallel.

Description.—Male: Carapace coarsely granulate, especially on protuberant portions. Cardiac, gastric, and branchial regions and first segment of abdomen each surmounted by a stout spine or large tubercle. Two small tubercles on intestinal region just above posterior margin, and one enlarged tubercle on the margin of the

Material examined of Batrachonotus fragosus

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Variations
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°F						
North Carolina: Off Cape Hatteras.	35 35 20	74 58 45	27	crs. gy. S.		Oct. 20, 1884	2296	*Albatross*	2♂ 1♀	18437	Male, cardiac tubercle, 4 dorsal spines; male, cardiac and right branchial tubercles, 3 dorsal spines; female, branchial spines, 3 dorsal tubercles.
Florida:											
Off Pensacola	Pensacola Light, N. NW. ⅛ N., 9⅜ m.		12	S.	59.7	Jan. 18, 1913	28	*Fish Hawk*	1♀	55493	Branchial spines, gastric and abdom. tubercle, no cardiac tubercle nor spine.
Southwest of Cape San Blas.	29 18 15	85 32 00	25	crs. gy. S. brk. Sh.		Feb. 7, 1885	2370	*Albatross*	2♂	18105	5 dorsal spines.
Southeast of Cape San Blas.	28 45 00	85 02 00	30	gy. S. brk. Co.		Mar. 15, 1885	2405	do.	4♂ 3♀	18106	Males, 5 dorsal spines; 1 female, with cardiac tubercle, 2 females, without; all females have 4 dorsal spines or tubercles.
Off Boca Grande	Boca Grande Light, N. NE. ⅜ E., 24½ m. to NE. ¼ N., 20 m.		12.5		68.5	Jan. 2, 1913	10	*Fish Hawk*	1♂	55492	Cardiac tubercle, 4 dorsal spines.
Off Fowey			75–100			May, 1917	361	*Eolis*, J. B. Henderson.	1♂	50928	Cardiac and right branchial tubercle, 3 dorsal spines.
Off Tortugas			16					do.	4♂	47069	1 male, 5 spines; 2 males, 4 spines, cardiac tubercle; 1 male, 4 tubercles, abdominal spine.

Do.		4					do.	1♂	47070	4 tubercles, abdominal spine.
Cuba: Bahia Honda					June 7, 1914		*Tomas Barrera*	1♂ 1♀	48739	Female, abdominal tubercle, no other tubercles or spines. Male, soft shell.
Jamaica:										
Montego Bay	Bathing beach	(1)			July 19, 1910		E. A. Andrews	1♂	43020	No tubercles nor spines.
Do.		40			Aug. 4, 1910		C. B. Wilson	1♀	43021	No tubercles nor spines; cardiac region almost smooth.
Porto Rico:				°C						
San Juan Harbor	NW. angle Morro Castle, ⅜ m.	4.5–5.5	S. M.	25.2	Jan. 16, 1899	6054	*Fish Hawk*	1♂	21135	No tubercles nor spines.
Off Humacao	Humacao, N. ½ W., 3 m.	12.5	Co.	26.4	Feb. 6, 1899	6098	do.	1♀	24114	5 short spines.
Off Vieques Island	Point Mula L. H., S. SW. ⅜ W., 5¾ m.	14	Co. S. Sh.	25.6	do.	6085	do.	1♀	24109	4 short spines; cardiac regions covered with bryozoan.
Do.	Culebrita L. H., NE. by N., 10 m.	15	Co.	26	do.	6091	do.	2♀	24108	5 spines.
Do.	Culebrita L. H., NE. ⅜ E., 7¼ m.	16	Co.	25.2	do.	6092	do.	1♂ 1♀	24113	Do.
Off Culebra Island	Point Mula L. H., SW. ½ S., 8½ m.	14.75	Co. S.	25.5	do.	6086	do.	3♀	24110	1 female, 5 spines; 1 female, 4 spines, no cardiac tubercle; 1 female, 4 tubercles, no abdominal tubercles nor spine, an intestinal spine.
Do.	Culebrita L. H., NE., 5¼ m.	15	Co.	25.2	do.	6093	do.	1♂	24111	5 spines.
St. Thomas	Sail Rock, W. by N. ½ N., 6 m.	20–23	Co.	25.8	do.	6079	do.	1♂	24112	Do.
Curaçao	Rifwater (lagoon)	(2)			Sept. 28, 1905		J Boeke	1♂	Leiden Mus.	
Brazil:										
Rio de Janeiro		(3)			1876–77		R. Rathbun, Hartt Explor.	1♀ ovig.	19943	4 very small tubercles; no abdominal tubercle nor spine. Holotype of *B. brasiliensis*.
Do.								2♂	Copenhagen Mus.	4 tubercles; abdominal spine.

---

[1] Beach

[2] Shallow water.

[3] Dredged.

branchial region; also a short spine on subhepatic and on pterygostomian region. Rostrum formed of two rounded lobes separated by a shallow notch; its margin and the supraorbital margin denticulate. Abdomen and sternum granulate, except for a transverse smooth area between bases of chelipeds.

Chelipeds a little longer than carapace, spinulous; ischium with a distal spine; manus slightly compressed; fingers nearly as long as the palm, gaping for nearly their whole length, a large tooth in middle of pollex.

Female: Carapace narrower behind and wider in front than male, tuberculation more uniform, spines less frequent. First ambulatory leg very little longer than second, about one and a half times length of the carapace. Abdomen tuberculate or granulate.

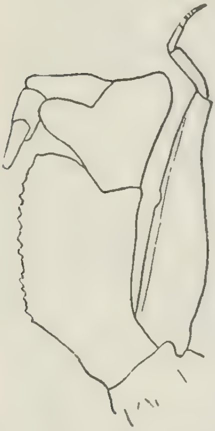

Fig. 48.—Batrachonotus fragosus (47070), maxilliped, × 18.1

Variations.—This species shows wide variations from the type. Stimpson described a single male from south of the Tortugas as having tubercles on the protuberant parts of the carapace and the first segment of the abdomen. Two males out of five from the Tortugas (47069 and 47070) resemble Stimpson's in having four carapace tubercles but differ in having an abdominal spine. From this there are all variations of roughness, from five spines in place of tubercles, on the one hand, to no tubercles or spines at the summit of elevations on the other. The different combinations of variations in this character are shown in the list of specimens (pp.124–125), under column "Variations," where the five prominences dealt with are the gastric, cardiac, and branchial (paired) regions and the first abdominal segment.

Unique is one female out of three (23110) which bears a median intestinal spine, no enlarged tubercle or spine on abdomen and four tubercles elsewhere.

Measurements.—Male (47070), length of carapace to tip of rostral teeth 7.2, width 6.2 mm. Female (19943), length 7, width 6 mm.

Range.—From Cape Hatteras, North Carolina, to Gulf of Mexico (coast of Florida), to West Indies and Rio de Janeiro, Brazil. Depth, 4 to 75 fathoms.

Material examined.—See table, pages 124–125.

BATRACHONOTUS NICHOLSI Rathbun

Plate 39, figs. 5–8

Batrachonotus nicholsi Rathbun, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 55 (type-locality, Gulf of California, lat. 29° 30′ N., long. 112° 40′ W.; holotype, Cat. No. 18107, U.S.N.M.); vol. 21, 1898, p. 570.

Diagnosis.—Postorbital tooth reaching or nearly reaching end of eye. No large tooth on immovable finger of male. Antennal spines divergent.

Description.—Compared to *B. fragosus*, the granulation is everywhere coarser and more beadlike. Two enlarged tubercles or spines on branchial margin. Rostral teeth more acute; basal antennal spines more produced and very divergent from each other, the distance between the tip of each spine and the tip of the nearest rostral tooth being more than twice as great as between the tips of the rostral teeth. Supraorbital margin more elevated. Sternum behind the chelipeds not completely granulate, the granules larger, the segments bearing the ambulatory legs having only one or two irregular rows of granules, the depressions between the segments smooth.

Chelipeds very rough, the immovable finger without an enlarged tooth. First leg a little more than one and a half times as long as carapace.

Variations.—While in most of the specimens the dorsal protuberances are crowned by a stout spine, varying in length, sometimes one or more of these is replaced by a tubercle. In the type females, the tubercles are very small, and the smooth space between regions is greater than in any other specimens.

Measurements.—Male (21782), length of carapace to tips of rostrum 9, width without spines 7.9 mm. Female (21869), length 7.5, width 6.5 mm.

Range.—Lower California, Mexico, from Abreojos Point on the west coast to Gulf of California. Depth, 12 to 145 fathoms.

Material examined.—See table, page 128.

Genus PYROMAIA Stimpson

Pyromaia Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 109; type, *P. cuspidata* Stimpson.—A. Milne Edwards, Crust. Rég. Mex., 1879, p. 197.

Apiomaia von Martens, Zool. Rec., 1871 (1873), p. 182; substituted for *Pyromaia*.—Miers, Journ. Linn. Soc. London, vol. 14, 1879, p. 651.

Carapace pyriform, convex, rough with tubercles and spines; rostrum simple, well developed; supraorbital spine usually present; postorbital spine large, distant from the ocular cavity, and curved around end of eye, tip directed forward. Basal article of outer antennae long and narrow, tapering anteriorly; movable portion very slender. Epistome a little wider than long. Buccal cavity not

Material examined of Batrachonotus nicholsi

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°F						
Mexico:											
Off Abreojos Point	26 14 00	113 13 00	48	yl. M	53.9	May 3, 1888	2834	*Albatross*	1♂	21872	
Magdalena Bay	24 38 00	112 17 30	51	gn. M		May 2, 1888	2833	do	2♂ 2♀	21871	
Do	24 32 00	111 59 00	12	fne. gy. S		do	2831	do	1♀	21870	
Off Cape St. Lucas	22 52 00	109 55 00	31	rky	74.1	May 1, 1888	2829	do	1♂ 1♀	21869	
Gulf of California	29 19 00	112 50 00	145	br. M	54.9	Mar. 24, 1889	3015	do	1♀	22290	
Do	29 30 00	112 40 00	45			1880-82		Lieut.-Comdr. H. E. Nichols, U. S. N.	2♀	18107	1 is holotype.

Material examined of Pyromia arachna

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.
	Latitude N.	Longitude W.								
	° ′ ″	° ′ ″			°F					
Southeast of Charleston, South Carolina	32 10 00 to 32 11 00	79 07 00 to 79 04 00	117	gn. M. S		Dec. 9, 1919	20035	*Albatross*	1♂	54457
Southwest of Cape San Blas, Florida	28 36 00	85 33 30	111	gy. M		Mar. 14, 1885	2402	do	7♂ 3♀ ovig. 1y	9758
Do	28 38 30	85 52 30	142	gn. M. brk. Sh		do	2401	do	8♂ 9♀ (1 ovig.)	9750
Do	28 41 00	86 07 00	169	gy. M		do	2400	do	1♂ holotype, 2♀ ovig.	18144
Do	28 44 00	86 18 00	196	gy. M	51.6	do	2399	do	1♀ y	9745
South of Mobile Bay, Alabama; east of Delta of Mississippi River.	29 07 30	88 08 00	210	gy. M	67	Feb. 11, 1885	2377	do	2	9649

completely filled by the outer maxillipeds; ischium with its inner distal portion strongly advanced; merus cordate, with a prominent narrow lobe on the inner side. Chelipeds of moderate length, merus triangulate, manus swollen, fingers long and curving inward. Ambulatory legs very long and slender, cylindrical, decreasing successively in length from first to fourth pair; dactyli long and slightly curved. Abdomen of male with the last two segments, of female with the last three segments, fused.

Not found outside of America, where it ranges from North Carolina to Florida Straits and Gulf of Mexico; and from Monterey Bay, California, to Panama.

KEY TO THE SPECIES OF THE GENUS PYROMAIA

A¹. A spine near middle of basal antennal article. Ambulatory legs long, first leg in male three or more times as long as carapace.
  B¹. Rostrum tapering regularly to tip. Chelipeds and legs covered with short, soft pubescence. No spine at proximal end of merus of ambulatory legs -- **cuspidata**, p. 129.
  B². Rostrum triangular at base, then narrowing to a slender spine. Chelipeds and legs not noticeably pubescent. An erect spine at proximal end of merus of ambulatory legs; a short fringe of hair on either side of the dactyls -- **arachna**, p. 131.
A². No spine near middle of basal antennal article. Ambulatory legs shorter than in A¹, first leg in male usually not much over twice as long as carapace.
  B¹. Two large median gastric tubercles. Granules few; greater part of carapace smooth. Legs unusually long and slender, but less than three times as long as carapace ---------------- **tuberculata**, var. **A.**, p. 136.
  B². Not more than one large median gastric tubercle. Granules more numerous than in B¹.
    C¹. One large median gastric tubercle. Granules not nearly covering carapace. Rostrum longer, or just as long, as wide.
      tuberculata, typical, p. 133.
    C². No large median gastric tubercle. Granules coarse, almost covering carapace. Rostrum short, wider than long.
      tuberculata, var. **B.**, p. 136.

PYROMAIA CUSPIDATA Stimpson

Plate 41

Pyromaia cuspidata Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 110 (type-localities, off Sand Key, 82 fathoms; off Alligator Reef, 88 fathoms; off the Samboes, 93 and 121 fathoms; S. W. of Sand Key, 125 fathoms; types not extant).—A. Milne Edwards, Crust. Rég. Mex., 1879, p. 197; pl. 36, figs. 2–2*f*.—Rathbun, Proc. U. S. Nat. Mus., vol. 17, 1894, p.73 (part).—Hay and Shore, Bull. Bur. Fisheries, vol. 35, 1915–16 (1918), p. 455, pl. 38, fig. 4.

Apiomaia cuspidata von Martens, Zool. Rec., 1871 (1873), p. 182.—Miers, Journ. Linn. Soc. London, vol. 14, 1879, p. 651.

Diagnosis.—Four (or five) spines on branchial margin. Six median spines or large tubercles on carapace. Rostrum tapering rather regularly to the tip. Manus of male cheliped subglobular. No spine near proximal end of merus of ambulatory leg.

Description.—Adult male: Regions of carapace well marked, tumid, rough with granules, sharp tubercles, and spines. Six of the larger spines are median (2 mesogastric, 1 urogastric, 2 cardiac, 1 intestinal), one is protogastric, two or three are hepatic, and the remainder branchial, as follows: Four (or five) marginal and seven or eight scattered on dorsal surface. Of the median spines, the anterior cardiac and posterior mesogastric are the longest. The granules which cover the surface are not close together and are irregular in size. In the depressions separating the branchial from the cardiac, gastric and hepatic regions, there are several deep pits. Rostrum simple, between one-fourth and one-fifth the postrostral length of carapace, narrow, inclined upward, trigonal, acute, its upper and lateral margins spinulous. There is an acute, triangular, interantennular spine, pointing downward and slightly forward. Supraorbital spine almost erect, directed slightly outward and forward. Anterior margin of postorbital tooth, both above and below, fringed with hair.

Basal article of antenna with a terminal spine, a large spine at middle of inner margin, and a small spine at middle of outer margin followed by a row of tubercles or spinules. A single row of spinules and one spine on pterygostomian region, a tubercle at angle of buccal cavity. Outer maxillipeds spinulous; a longitudinal median depression on ischium. Chelipeds and ambulatory legs covered with a short fur, underneath which the surface is rough with sharp granules or spinules. Margins of merus of cheliped armed with short spines, terminal spine of upper margin longer; upper margin of carpus spinulous, a few larger spines on outer surface; propodus much inflated, subglobular; dactylus as long as the upper margin of propodus; both fingers bare and with two longitudinal sulci on the outer side; prehensile margins evenly dentate and in contact to near the base, where they are denticulate and gape slightly. Ambulatory legs spinulous; merus with an acute oblique spine at distal end. First abdominal segment long, bearing an acute spine pointing backward. Sternum oblique; anterior portion strongly retreating.

Adult female: Chelipeds and legs almost bare. Chelipeds not much stouter than ambulatory legs, dactylus one and a half times as long as the small palm. Legs shorter than in male.

Young: Pubescence slight, as in female. Postorbital tooth less extensive, tip directed obliquely outward and forward; in very small specimens, about 7.5 mm. long, the postorbital tooth is slender and projects directly outward.

Measurements.—Male (46778), length of carapace 40.7, width 32.3 mm.

Range.—From Cape Lookout, North Carolina, to Florida Straits, Gulf of Mexico (west coast of Florida) and Yucatan Channel. Depth, 15 to 200 fathoms.

Material examined.—See table, page 132.

PYROMAIA ARACHNA Rathbun

Plates 42 and 43

Pyromaia cuspidata RATHBUN, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 73 (part); not *P. cuspidata* Stimpson.

Pyromaia arachna RATHBUN, Proc. U. S. Nat. Mus., vol. 64, art. 14, 1924, p. 1 (type-locality, Gulf of Mexico, SW. of Cape San Blas, Florida; 169 fathoms; station 2400, *Albatross;* male holotype, Cat. No. 18144, U.S.N.M.).

Diagnosis.—Three spines on branchial margin. Five median spines on carapace. Rostral spine slender, acuminate. Manus of male cheliped elongate. An erect spine near proximal end of merus of ambulatory legs; a fringe of hair on each side of dactylus.

Description.—Adult male: In form, strongly resembles *cuspidata.* Five median spines on carapace, no urogastric spine. Three marginal spines on branchial regions; these are exclusive of the spine above postero-lateral margin. Spines more slender than in *cuspidata,* the posterior gastric, anterior cardiac and intestinal spines being longest. The fine granules of the carapace are further apart than in *cuspidata,* and the interregional depressions are, to some extent, smooth. Rostrum more ascending than in *cuspidata,* and longer, between one-third and one-fourth the postrostral length of carapace; it is triangular at base, then abruptly narrows into a slender spine, having usually two enlarged spinules above. The spine on outer margin of basal article of antenna is situated near the posterior end instead of at the middle.

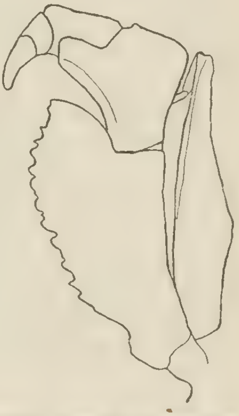

Fig 49.—Pyromaia cuspidata (46778), maxilliped, × 3.75

Chelipeds and ambulatory legs naked, surface rougher than in *cuspidata.* Chelipeds less stout, margins spinous; manus swollen, but much narrower than in *cuspidata,* the length along upper margin twice as great as height, which slightly exceeds thickness; gape at base of fingers very narrow. An erect spine at proximal end of merus of legs, distal spine a little longer than in *cuspidata;* a thick fringe of short hair on each side of dactylus. Spine of first abdominal segment longer than in *cuspidata.*

Adult female: Chelipeds not much stouter than ambulatory legs. All dorsal spines are reduced in size except the long abdominal spine.

Material examined of Pyromaia cuspidata

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
North Carolina:	° ′ ″	° ′ ″			°F						
East of Cape Lookout	34 39 15	75 33 30	107	gy. S. P.		Oct. 18, 1885	2601	*Albatross*	1♀	18145	
Do	34 38 30	75 33 30	124	S. R.		do	2602	do	1♀y.	18146	
Fishing grounds, off Beaufort.			15					*Fish Hawk*	3♂y. 2♀y.	51021	
Florida:											
Fowey			100			May, 1917	360	*Eolis*, J. B. Henderson.	3♀	50927	
Sambo Key			110					do	2♀y.	55494	
Do			115					do	1♀y.	55501	
Gulf Stream, on edge of Pourtales Plateau, S. of Key West.			90	Co. Frag.				do	3♂ 7♀ ovig.	46778	
Pourtales Plateau	24 16 00	81 22 00	([1])			June 27, 1893	56	State Univ. Iowa Exped.	1♀y.	Mus. S.U.I.	
Gulf Stream, off Key West.	24 17 05	81 58 25	132	S.	52	Feb. 14, 1902	7280	*Fish Hawk*	1♂ 2♀y.	46779	
Do	24 21 55	81 58 25	98	S.	55	do	7279	do	1♀y.	46780	
Off Key West			50–60				27	State Univ. Iowa Exped.	1♀y.	Mus. S.U.I.	
Do			100					*Eolis*, J. B. Henderson.	1 carapace	55502	
Do			100–125					do	3♂y. 2♀y.	55498	
Do			90			Apr. 24, 1916		do	1♀y.	55496	
Do			75					do	1♀ ovig.	55499	
SE. by E. ½ E. of Sand Key.			90					do	2♂y.	55497	
S. of Sand Key			85					do	1♂y.	55495	
Sand Key			75–125			Mar. 29, 1872		*Bache*	1	2957, M.C.Z.	
West of Tortugas	24 37 30	83 36 00	110		58.5	1877–78	26	*Blake*	1	2892, M.C.Z.	
West of Charlotte Harbor.	26 31 00	[2]85 53 00	119			do	50	do	2	2891, M.C.Z.	
South of Cape San Blas	28 36 00	85 33 30	111	gy. M.		Mar. 14, 1885	2402	*Albatross*	1 y.	46741	
Yucatan Channel	21 14 00		100			Apr. 22, 1872		*Bache* (Stimpson).	1♀	2958, M.C.Z.	

[1] About 200 fathoms.

[2] Position probably wrong.

Young: Spines of young male longer than of young female. Postorbital tooth less extensive and less curved than in the adult, as is also the case in *cuspidata;* in the carapace of the smallest *arachna*, 12.5 mm. long, the tooth is curved and directed obliquely outward. The proximal spine on the merus of the legs is present in all sizes though it is very short, almost tuberculiform, in the smallest.

Measurements.—Male, holotype (18144), length of carapace 45, width without spines 35 mm.

Range.—Off South Carolina; E. part of Gulf of Mexico. Depth, 111 to 210 fathoms.

Material examined.—See table, page 128.

PYROMAIA TUBERCULATA (Lockington)

Plate 40, fig. 3; plate 218, figs. 1–4

Inachus tuberculatus LOCKINGTON, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 30 [3] (type-locality, mouth of San Diego Bay, 8 fathoms; type not extant).

Microrhynchus (Inachus) tuberculatus LOCKINGTON, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 64 [2].

? *Inachoides brevirostrum* LOCKINGTON, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 75 [13] (type-locality, Magdalena Bay, L. C., 3 fathoms; type not extant).

? *Inachodes brevirostrum* STREETS and KINGSLEY, Bull. Essex Inst., vol. 9, 1877, p. 105.

Inachoides magdalenensis RATHBUN, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 228 (type-locality, off Santa Margarita Island, Lower California; type, Cat. No. 17337, U.S.N.M.); Harriman Alaska Exped., vol. 10, 1904, p. 171.

Neorhynchus mexicanus RATHBUN, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 233 (type-locality, Gulf of California, station 3030; type, Cat. No. 17350, U.S.N.M.).

Dasygyius tuberculatus RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 570; Harriman Alaska Exped., vol. 10, 1904, p. 172, pl. 10, figs. 3 and 3*a*, text-fig. 92.—HOLMES, Occas. Papers California Acad. Sci., vol. 7, 1900, p. 27.—WEYMOUTH, Stanford Univ. Publ., Univ. Ser. No. 4, 1910, p. 27, pl. 3, fig. 8.

Inachoides tuberculatus SCHMITT, Univ. California Publ. Zool., vol. 23, 1921, p. 199, text-fig. 123.

Diagnosis.—Carapace of typical form with three enlarged median tubercles or spines. Antennal spines incurved at tip. Manus of male cheliped subglobular. Dactyls of legs unarmed in adult, spinulous in young.

Description.—Adult male: Carapace broadly pyriform and finely pubescent; elevated portions granulate and tuberculate, with a larger tubercle, often spiniform, on the mesogastric, cardiac and intestinal regions and sometimes on the summit of the branchial regions. There is also a short spiniform tubercle pointing upward and backward on the first segment of the abdomen. Rostrum of variable length, from just as long to one and a third times as long as

Material examined of Pyromaia tuberculata

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°F						
California:											
Off Venice						Aug. 2, 1913		*Anton Dohrn*	2♂	50187	From Venice Mar. Biol. Sta.
Do						July 29, 1913		do	1♀	50186	Do.
Southwest of Venice						July 11, 1914		do	1♂	50184	Do.
Between Venice and Rocky Point.						Aug. 11, 1914		do	1♂	50181	Do.
Do						do		do	2♂ 3♀ ovig	50179	Do.
Do						do		do	1♂	50185	Do.
Off El Segundo, Santa Monica Bay.						Aug. 12, 1914		do	1♀, thin shell	50188	Do.
Half mile out between El Segundo and Playa del Rey.						Aug. 2, 1913		do	1♂	50180	Do.
Off Wilmington	33 36 00	118 09 30	27	fne. gy. S. St		Feb. 5, 1889	2939	*Albatross*	2♀ ovig	18619	
Long Beach								H. N. Lowe	1♂	46776	
San Pedro								do	1♂	32967	
Off San Pedro, Point Fermin and White's Point.						Nov. 30, 1912		*Anton Dohrn*	1♀ ovig	50182	From Venice Mar. Biol. Sta.
San Pedro								E. P. Chace	1♀	54007	
Alamitos Bay								H. N. Lowe	2♂ 4♀	23056	
Newport Bay						Nov. 27, 1914		*Anton Dohrn*	2♂ 1♀	50260	From Venice Mar. Biol. Sta.
Laguna Beach								W. A. Hilton	2♀ ovig	48912	
Do								do	1♂	50605	
Do								do	3♀ ovig	50604	
Balboa, Laguna Beach							D. 5	do	1♀ ovig	54023	
San Diego								S. J. Holmes	1♂ 2♀ ovig	19636	
Do						Mar. 9, 1898		*Albatross*	1♂	21762	
San Diego Bay	Beacon No. 7, E. ¼ N.		6.75	fne. S		Mar. 21, 1894	3575	do	1♂ 2♀ ovig	19338	
Do	End National City Wharf, N. by W. ½ W., 1.4 m.		3.5	R. brk. Sh		Mar. 24, 1894	3590	do	2♂	18982	
Do	Beacon No. 8, SW. ¾S.		4.5	R. brk. Sh		do	3591	do	1♂	18983	
Do	½ k. S. SE. National City Wharf.		5	M. Sh.		Mar. 31, 1896	3616	do	1♂, soft shell, 1♀	20143	
Do	Abreast Beacon No. 9.		4.5	M. Sh		do	3618	do	1♂ 5♀	20144	
Do	1½ k. E. SE. Beacon No. 8.		4	M. Sh		do	3619	do	6♂ 3♀	20145	
Do	¾k. E. by S., Beacon No. 8.		6	M. Sh		do	3620	do	35♂ 22♀ ovig	20146	
North Island, San Diego Bay.						Apr. 2, 1896		do	2♂	20147	

Coronado dock						Mar. 21, 1904		do	2♂ 1♀	46775	
S. of San Diego Bay	32 35 00	117 13 30	22	gy. M. crs. G	66	Mar. 24, 1898	3679	do	1♀ ovig	21763	
Mexico:											
Rosalia Bay, Lower California.						Aug. 22, 1896		A. W. Anthony	1♀ ovig	19520	
Off Abreojos Point, Lower California.	26 42 30	113 34 15	5.5	gn. M		May 4, 1888	2835	*Albatross*	2♀ 1 yng	21882	
Santa Maria Bay, Lower California.						Mar. 18, 1911		do	1♂ 2♀ 2♀	47120 Amer. Mus.	
Magdalena Bay, Lower California.	24 38 00	112 17 30	51	gn. M	56.4	May 2, 1888	2832	do	1♀ ovig	21881	
Do	24 38 00	112 05 30	17	fne. gy. S	65	Apr. 9, 1889	3042	do	2♀	17339	
Do	24 35 30	112 05 00	27	fne. gy. S	64.5	do	3041	do	1♀	17338	
Do	24 32 00	111 59 00	12	fne. gy. S		May 2, 1888	2831	do	10♂ 20♀	21880	
Do								C. R. Orcutt	5♂	51109, 51110, 51112, 51113, 51114.	
Off Santa Margarita Island.	24 27 00	111 59 00	47	fne. yl. S	68.5	Apr. 8, 1889	3039	*Albatross*	1♂	17337	Holotype of *Inachoides magdalenensis.*
Gulf of California	31 33 00	114 20 30	10.5	fne. gy. S brk. Sh		Mar. 26, 1889	3029	do	1♀	17349	Granulation extensive.
Do	31 07 00	114 29 00	20	M	64	Mar. 27, 1889	3030	do	1♂ 2♀	17350	Type of *Neorhynchus mexicanus.*
Do	31 06 45	114 28 15	33	bn. M	63.8	do	3031	do	1♀ ovig	17351	Granulation extensive.
Do	30 58 30	113 17 15	11	gy. S. bk. Sp	66.1	Mar. 24, 1889	3022	do	2♂ 1♀ ovig	17348	In males a median cardiac, intestinal and abdominal spine.
Do	30 50 45	114 29 45	18	gy. M	63.5	Mar. 27, 1889	3033	do	3♂ 1♀	17352	
Do	30 37 30	113 07 00	7	gy. S. bk. Sp		Mar. 24, 1889	3020	do	1♀	17347	
Do	30 16 00	113 05 00	36	gy. S. brk. Sh	63.3	do	3018	do	1♀ y	17469	
Do	28 28 00	112 04 30	29	gy. S	62.9	Mar. 23, 1889	3014	do	2♂ 2♀	17346	Females almost completely granulate.
Do	28 23 45	111 58 00	14	gy. S. brk. Sh	65	do	3013	do	1♀	17345	Granulation extensive.
Do	27 45 00	110 45 00	20	gn. M	65.2	Mar. 31, 1889	3037	do	3♀ (2 ovig.)	17353	Do.
Do	24 22 30	110 19 30	8	brk. Sh		Apr. 30, 1888	2824	do	1♀	21877	Var. *A.*
Do	24 18 00	110 22 00	26.5	brk. Sh		do	2823	do	7♂ 5♀	21876	Var. *A.*
Do	24 16 00	110 22 00	21	gy. S. brk. Sh		do	2822	do	1♂	25237	Var. *A.*
Do	24 11 30 to 24 12 00	109 55 00	9.5–10	Sh		do	2826–8	do	2♂	21878, 54466	Var. *A.*
Off Cape St. Lucas, Lower California	23 33 00	110 37 00	66	fne. S	66	May 1, 1888	2830	do	2♂	21879	Var. *A.*
Panama:											
Bay of Panama	8 51 00	79 31 00	7	gn. M		Mar. 30, 1888	2800	do	1♀	21874	Var. *B.*
Do	8 38 00	79 31 30	16	gn. M		do	2802	do	1♂ 1♀	21875	Var. *B.*

wide, width measured behind the eyestalks. Supraorbital arch with a tubercle at summit. Postorbital tooth large, curving about the extremity of the eye, tip directed nearly forward. Spine at end of basal antennal segment slightly incurved. Sternum conspicuously granulate or tuberculate, pubescent, deeply grooved between segments, a large tubercle opposite base of each cheliped.

Chelipeds stout, shorter than first two or three pairs of ambulatories. Hand inflated, subglobular, sparsely granulate, a longitudinal row of four or five tubercles through middle of proximal end of outer surface. Fingers nearly as long as palm, triangularly gaping when closed; a large low tooth at proximal third of immovable finger. Ambulatory legs slender, similar, diminishing in length from first to fourth pair; dactyli moderately curved, almost smooth.

Adult female: Smaller than male; granulation more extensive, median and branchial tubercles less enlarged, rostrum shorter (at the most very little longer, about one-tenth, than wide), abdomen irregularly tuberculate, chelipeds slender, shorter than any of the legs, palms only slightly inflated, fingers not gaping.

Young: In the adult, the postorbital tooth is large and curves partly about the eye, as in typical *Pyromaia;* in the young, however, the postorbital tooth is smaller and more slender than in the adult and is directed outward and very little forward, the dactyls of all the ambulatory legs are, relative to their propodites, shorter and more curved than in the adult, and armed with spinules, that is, they are more prehensile. The young, therefore, are typical *Inachoides.*

Variations.—Besides the remarkable variations referable to sex and age, there are also variations in the width of carapace, and amount and uniformity of granulation, the length of the rostrum, and the prominence of the supraorbital tubercle, which may be spiniform. There are two varieties which stand out noticeably by a combination of characters:

Variety *A:* Two large, sometimes high, median gastric tubercles. Granules few. Legs unusually long and slender; first leg in male between two and a half and three times length of carapace. Small specimens with postorbital tooth pointing outward. Locality, near the tip of the peninsula of Lower California (Cat. Nos. 21879, 21876, 25237).

Variety *B:* Carapace short, stout, branchial regions uncommonly swollen, hepatic region crowded toward the postorbital tooth. Granules coarse, fairly uniform in size, almost covering the carapace. Rostrum broader than long. Panama Bay (Cat. No. 21875). A young one of the same shape but with fewer granules comes from a neighboring locality (Cat. No. 21874).

Measurements.—Male (20146), length 21.7, width 17.7 mm. Female of large size (20146), length 15, width 12.2 mm. Male, var. *A* (21879), length 11, width 8 mm. Male, var. *B* (21875), length 13.4, width 12.1 mm.

Range.—Monterey Bay, California, 45 fathoms, 1 specimen (Weymouth). From Venice, California, to Bay of Panama. Depth, 3½ to 66 fathoms.

Material examined.—See table, pages 134–135.

Genus DASYGYIUS Rathbun

Microrhynchus Bell, Proc. Zool. Soc. London, vol. 3, 1835, p. 88; type, *M. gibbosus* Bell; Trans. Zool. Soc. London, vol. 2, 1836, p. 40. Name preoccupied by Megerle von Mühlfeld for a genus of Coleoptera in Dahl's "Coleoptera und Lepidoptera" [price list], Wien, 1823, p. 63.[25]

Cyrnus Audouin in de Haan, Fauna Japon., 1839, p. 86 (as synonym of subgenus *Microrhynchus*). Name preoccupied by Stephens in 1836 for a genus of insects.

Neorhynchus A. Milne Edwards, Crust. Rég. Mex., 1879, p. 186 (substituted for *Microrhynchus*). Name preoccupied by Sclater in 1869 for a genus of birds.

Dasygyius Rathbun, Proc. Biol. Soc. Washington, vol. 11, 1897, p. 164 (substituted for *Neorhynchus*).

Carapace ovate, terminating in a short rostrum. Postocular tooth well developed. A fissure at middle of upper margin of orbit. Eyes stout, constricted before the cornea. The basal segment of the antennae bears a tooth or spine at its extremity, and its inner crest projects downward. Merus of maxillipeds cordiform. Chelipeds short, merus curved, subtriangular in section; fingers about as long as palm. Ambulatory legs subcylindrical, hairy, the first and last pairs shorter than the second and third; dactyli long and slender, slightly curved. In the male the last two segments of the abdomen are fused, in the female the last three segments; the first segment is armed with a spine or tubercle and is much longer than the second.

Only two species known, from the west coast of middle America.

KEY TO THE SPECIES OF THE GENUS DASYGYIUS

A¹. Carapace convex. Rostrum bifid. Extremity of male abdomen narrowly triangular..gibbosus, p. 138.

A². Carapace flattened. Rostrum simple. Extremity of male abdomen broadly rounded....................................depressus, p. 138.

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[25] The name of the genus is followed by a list of species included.

DASYGYIUS GIBBOSUS (Bell)

Plate 274, figs. 1–4

Microrhynchus gibbosus Bell, Proc. Zool. Soc. London, vol. 3, 1835, p. 88 (type-locality, Galapagos Islands, 6 fathoms, sandy mud; holotype not extant); Trans. Zool. Soc. London, vol. 2, 1836, p. 41, pl. 8, figs. 1–1*c*.

Neorhynchus gibbosus A. Milne Edwards, Crust. Rég. Mex., 1879, p. 187.

Dasygyius gibbosus Rathbun, Proc. U. S. Nat. Mus., vol. 38, 1910, p. 571.

Diagnosis.—Carapace convex. Rostrum bifid. Extremity of male abdomen narrowly triangular. Ambulatory legs diminishing in the order 2. 3. 1. 4.

Description.—Carapace convex; regions elevated and separated by rather deep furrows; surface covered, particularly on each branchial region, with numerous distinct, rounded tubercles resembling very minute pearls. Rostrum very small and bifid. Antennae half as long as body, basal article as long as rostrum, with a tooth at outer angle. Antennular fossae less open than in *D. depressus.* Merus of maxillipeds cordate, deeply notched for the attachment of the palp. First segment of abdomen of male with a small tubercular tooth, last segment very long, its terminal portion narrowly triangular.

Chelipeds moderately enlarged, granulate; hand rounded; fingers arched, gaping for more than half their length, denticulate at the extremities, a basal tooth on the dactylus. The ambulatory legs diminish in length in the order 2, 3, 1, 4; they are cylindrical and hairy. (After Bell.)

Color.—Yellowish-white.

Measurements.—Male, holotype, length of carapace 15.2 mm. (6 lines), width 12.7 mm. (5 lines.) (Bell.)

Range.—Known only from the type-specimen from the Galapagos Islands, 6 fathoms, sandy mud.

DASYGYIUS DEPRESSUS (Bell)

Plate 1; plate 274, figs. 5–8

Microrhynchus depressus Bell, Proc. Zool. Soc. London, vol. 3, 1835, p. 88 (type-locality, Galapagos Islands, 6 fathoms, sandy mud; female, holotype not extant); Trans. Zool. Soc. London, vol. 2, 1836, p. 42, pl. 8, figs. 2, 2*d*-*f*.

Neorhynchus depressus A. Milne Edwards, Crust. Rég. Mex., 1879, p. 187.

Dasygyius depressus Rathbun, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 570; vol. 38, 1910, p. 571.

Diagnosis.—Carapace flattened. Rostrum simple. Extremity of male abdomen broadly rounded. Ambulatory legs diminishing in the order 3, 2, 4, 1.

Description.—Carapace depressed, covered with fine granulations with here and there occasional larger ones; a short stout spine near the margin of the branchial region. Epimeral plates well developed and produced in a spine between the second and third, and third and fourth ambulatory legs. Rostrum triangular, tipped with a small, slightly capitate spine. Eyes large, flattened. Basal antennal article with dentate margins, terminating in two teeth, the outer the longer, incurved at tip. Second article (or first movable article) of the antennules exceeding in length the fossa, and in large specimens exceeding the rostrum. Maxillipeds rather widely separated; ischium with a shallow sulcus; merus strongly cordiform, very narrow at base.

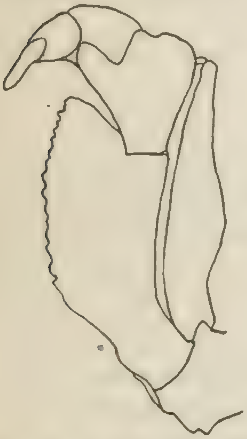

FIG. 50.—DASYGYIUS DEPRESSUS (21873), MAXILLIPED, × 5.26

Chelipeds of male stout, granulate; margins of merus tuberculate; palm inflated, subglobular; fingers narrowly gaping at base, finely crenulate in the gape, crenate along meeting edges; dactylus with a notch at base. Chelipeds of female weaker than legs, palms not swollen. The ambulatory legs diminish in the order 3, 2, 4, 1, three and two being nearly the same length; they are granulate and hairy, the first pair conspicuously hairy with a fringe of hair on either side; the hairiness diminishes from the first to the fourth pair, and the granulation diminishes from the proximal to the distal end of each leg; dactyli unarmed.

First segment of abdomen armed with a long, horizontal, conical, acute spine. In the male the sides of the last two segments are subparallel, the extremity broadly rounded. In the mature female the last or fused segment is much wider than long, almost covering the sternum laterally, the distal margin straight or slightly concave. Sternum of male flat, except in front of the chelipeds where, in both sexes, there is a smooth swelling and anterior to that a small spine between the maxillipeds.

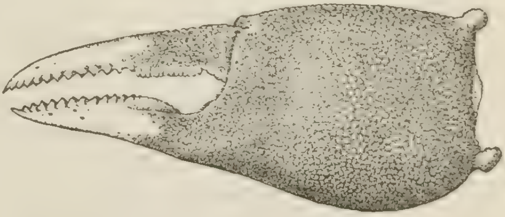

FIG. 51.—DASYGYIUS DEPRESSUS, MALE (21873), LEFT CHELA, × 2.66

Color.—Nearly white, with a very slight pinkish tinge. (Bell.)

Measurements.—Male (21874), length of carapace 20.6, width 19.8 mm. Female (21874), length of carapace 20, width 20 mm.

Range.—Gulf of California, Mexico; Galapagos Islands. Depth, 6 to 26.5 fathoms.

Material examined.—

Gulf of California; April 30, 1888; *Albatross:*

Lat. 24° 18′ 00″ N., long. 110° 22′ 00″ W.; 26.5 fathoms; brk. Sh.; station 2823; 14 males, 22 females (21873).

Lat. 24° 16′ 00″ N., long. 110° 22′ 00″ W.; 21 fathoms; gy. S. brk. Sh.; station 2822; 2 males, 3 females (18143).

Subfamily ACANTHONYCHINAE

Epialtidae+*Huenidae* M'LEAY, in Smith, Illus. Zool. S. Africa, Annulosa, 1838, p. 56.

Acanthonychinae ALCOCK, Journ. Asiat. Soc. Bengal, vol. 64, 1895, pp. 160, 164, 190.

Acanthonychidae STEBBING, Ann. S. Afr. Mus., vol. 6, 1910, p. 286.

Eyes without true orbits; eyestalks little movable, either short and more or less concealed beneath a forwardly-directed supraocular spine, or obsolescent and almost or completely sunk either in the sides of a huge beak-like rostrum, or between low preocular and postocular excrescences; a distinct postocular spine, which is not cupped (except in *Sphenocarcinus*) may be present. Rostrum either simple or two-spined. Basal antennal article truncate-triangular. External maxillipeds with the merus as broad as the ischium and with the palp arising from the antero-internal angle of the merus. Dactyli of ambulatory legs often prehensile or subchelate, the legs of the first pair often disproportionately long compared to those of the last three pairs. (After Alcock.)

KEY TO THE AMERICAN GENERA OF THE SUBFAMILY ACANTHONYCHINAE

A¹. Carapace broadly oval, smooth. Rostrum subtriangular, bidentate. Postorbital tooth wanting or small------------------------**Taliepus**, p. 162.
A². Carapace subpentagonal, oblong or pyriform, or, if oval, not smooth.
  B¹. Carapace subpentagonal or oblong, with only two lateral lobes (one hepatic, one branchial), postorbital tooth lacking or minute, rostrum simple or bilobed at tip only.
    C¹. Eyestalks short, immovable, without the shelter of a supraocular eave or postocular tooth. Carapace lumpy----------**Mocosoa**, p. 158.
    C². Eyestalks longer, movable.
      D¹. Some strong tubercles on dorsal surface of carapace. A strong thumblike process near proximal end of propodites of ambulatory legs--**Eupleurodon**, p. 160.
      D². Carapace nearly smooth. Preorbital tooth usually lacking; when present, small----------------------------------**Epialtus**, p. 144.
  B². Not as in B¹.
    C¹. Ambulatory legs subchelate. Carapace suboblong, with three lateral teeth or lobes. A blunt preorbital lobe; no postorbital tooth. **Acanthonyx**, p. 141.
    C². Ambulatory legs not subchelate.
      D¹. Carapace oval. Postorbital tooth present. Preorbital tooth absent. Carapace lumpy. Front tuberculiform, broader than long. **Esopus**, p. 191.
      D². Carapace subpentagonal or suboblong.
        E¹. Antennae visible in dorsal view at sides of rostrum.

F¹. No postorbital tooth or spine. Rostrum, in American species, bifurcate for half its length, horns widely divergent.
Menaethiops, p. 189.

F². A postorbital tooth. Carapace with two lateral expansions, one or both more or less laminate, the hepatic expansion subdivided, its anterior portion forming a postorbital tooth or lobe.

G¹. Lateral expansions both very broad, inwardly united, outwardly marked by a closed fissure........**Mimulus**, p. 182.

G². Lateral expansions narrower and separated by a sinus.
Pugettia, p. 167.

E². Antennae not visible in dorsal view at sides of rostrum.

F¹. Rostrum short, triangular, partly divided by a closed median slit. Legs more or less cristate..............**Leucippa**, p. 184.

F². Rostrum long, two-horned. Legs not cristate.
Sphenocarcinus, p. 185.

Genus ACANTHONYX Latreille

Acanthonyx LATREILLE, Encyc. Méth., Hist. Nat., Insectes, vol. 10, 1825, p. 698; type, *A. lunulatus* (Risso); Cuvier's Règne Anim., ed. 2, vol. 4, 1829, p. 58.—MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 342 (part).—A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 142.—MIERS, Journ. Linn. Soc. London, vol. 14, 1879, p. 650; *Challenger* Rept., Zool., vol. 17, 1886, p. 42.—ALCOCK, Journ. Asiat. Soc. Bengal, vol. 64, 1895, p. 198.—RATHBUN, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 60.

Meria GRIFFITH, Cuvier's Animal Kingdom, vol. 13, 1833, p. 165, in synonymy of *Acanthonyx;* type, *M. glabra* Griffith. Not *Meria* Rossi, 1807 (Hymenoptera).

Peltinia DANA (part), Amer. Journ. Sci., ser. 2, vol. 11, 1851, pp. 272 and 433; U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, pp. 84 and 129; vol. 2, 1853, p. 1422.

Carapace suboblong, rounded behind, almost smooth, not markedly constricted behind the prominent antero-lateral angles, the lateral branchial spines small and not prominent. Preocular spine or lobe prominent. Orbits small, entirely filled by the stout eyestalks; corneal end small. No postorbital tooth. Spines of rostrum united at base, acute, little divergent. Antennae visible at sides of rostrum. Merus of outer maxillipeds transverse, dilated at antero-external angle, slightly notched at antero-internal angle.

Chelipeds of adult male well developed; palm compressed, but slightly turgid in the middle, often slightly carinate above; fingers acute, gaping when closed. Legs short, rather stout, decreasing in length successively from first to fourth pair, compressed; penultimate article more or less dilated, the posterior margin concave and setose near end, at broadest part forming a blunt tooth against which the dactylus fits like a claw, when flexed; dactylus spinous on posterior margin. Abdomen of male with five or six segments.

Widely distributed on both coasts of middle America; Azores; Cape Verde Islands; Mediterranean; Red Sea; Indian Ocean; Hawaiian Islands.

Only one American species, which is found on both sides of the continent.

ACANTHONYX PETIVERII Milne Edwards

Plate 44; plate 222, figs. 1–6

Acanthonyx petiverii Milne Edwards, Hist. Nat. Crust., vol. 1, 1834, p. 343 (type-locality, Antilles; type in Paris Mus.).—Dana, U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 128; 1855, atlas, pl. 5, fig. 6*a*–*d*.—A. Milne Edwards, Crust. Rég. Mex., 1878, pl. 27, figs. 7–7*f*.—Rathbun, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 60; Proc. U. S. Nat. Mus., vol. 38, 1910, p. 534, pl. 46, fig. 4 (after Milne Edwards and Lucas).

Acanthonyx emarginatus Milne Edwards and Lucas, d'Orbigny's Voy. l'Amér. Mérid., vol. 6, pt. 1, 1843, p. 9; atlas, vol. 9, 1847, pl. 5, fig. 2 (type-locality, near Lima, Peru; type in Paris Mus.).

Acanthonyx debilis Dana, Amer. Journ. Sci., ser. 2, vol. 11, 1851, p. 272 (type-locality, Valparaiso, Chile; type not extant); U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 127; 1855, atlas, pl. 5, fig. 5 *a* and *b*.

Peltinia scutiformis Dana, Amer. Journ. Sci., ser. 2, vol. 11, 1851, p. 273 (type-locality, Bay of Rio Janeiro; type not extant); U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 130; 1855, atlas, pl. 5, fig. 7*a*–*c*.

Acanthonyx concamerata Kinahan, Journ. Roy. Dublin Soc., vol. 1, 1857, p. 334, pl. 14, fig. 1 (type-locality, North Cinchas Island, Peru; type in Mus. Roy. Dublin Soc.).

Acanthonyx petiveri Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 10, 1871, p. 97.—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 143, and synonymy.

Pugettia scutiformis[26] Miers, *Challenger* Rept., vol. 17, 1886, p. 40, footnote.—Moreira, Arch. Mus. Nac. Rio de Janeiro, vol. 11, 1901, pp. 65 and 138; Bull. Soc. Zool. France, vol. 45, 1920, p. 126, footnote.—?Lenz and Strunck, Deutsche Südpolar Exped. 1901–1903, vol. 15, Zool. 7, 1914, p. 276.

Diagnosis.—Hepatic lobe large; two small branchial lobes. Preorbital tooth obtuse. Male abdomen with six segments.

Description.—Antero-lateral angles subrectangular, obtuse, frontal region triangular. Two small teeth on margin of branchial region. Carapace almost smooth; three obscure setiferous tubercles on gastric region, one on the cardiac and one on the intestinal region; these tubercles are obsolete in the female, but the setae remain. Lateral teeth and rostrum setiferous. Rostrum short, deflexed, bifid. Preorbital lobes obtuse, elevated. Basal article of antennae unarmed, the next two articles subcylindrical, attaining end of rostrum; flagellum very slender. Chelipeds with merus subtriangulate; carpus with an external crest and two or three setiferous

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[26] Dana's *Peltinia scutiformis* is undoubtedly the young of *Acanthonyx petiverii*. A young male in the National Museum collection (19066), 5 mm. long, approximately the size of Dana's *P. scutiformis*, agrees with Dana's colored figure, 7*a*, U. S. Expl. Exped. atlas, pl. 5, except that the greater part of the yellow spot in the center of the carapace has disappeared. A. Milne Edwards (Crust. Rég. Mex.) comments on the narrowness of the penultimate article of the legs in the young of *A petiverii*. It is impossible to tell with certainty whether Lenz and Strunck's specimens are the young of *petiverii* or of an allied species.

tubercles; manus enlarged and compressed; fingers finely dentate, gaping to the extremity in male, almost entirely closed in female. Ambulatory legs with tufts of setae on extremities of articles; merus and carpus with a few setiferous tubercles on anterior or upper margin. Abdomen with fourth and fifth segments coalesced in both sexes.

Color.—Dark fawn-color (Milne Edwards and Lucas).

Measurements.—Male (40455), length of carapace to tip of horns 18.7, width 12.5 mm.

Variations.—A variable species. Ambulatory legs less cheliform in females and young than in adult males. Propodites in the young (5 mm. long) only slightly enlarged. (See *Peltinia scutiformis.*) Different names have been given on the size of the male hand, the development of the crest on the wrist, the presence or obsolescence of tubercles on the carapace, and other minor and age characters.

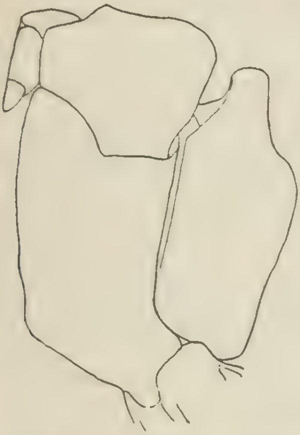

FIG. 52.—ACANTHONYX PETIVERII (40455), MAXILLIPED, × 11.2

Range.—Southern Florida and the Bahamas to Rio de Janeiro; Lower California, Mexico, to Valparaiso, Chile; Galapagos Islands (Bell). Shallow water to 6 fathoms.

Material examined.—

Miami, Florida: G. M. Gray; 1 male (42150).

Harbor Island, Bahamas: July 8, 1893; State University of Iowa Expedition; 1 male (18673), 2 males (Mus. S. U. I.).

Ensenada de Santa Rosa, Cuba: May 19, 1914; station 7; *Tomas Barrera* Exped., Henderson and Bartsch; 1 male, 1 female (48670).

Port Royal Cayes, Jamaica: P. W. Jarvis; 1 young (19066).

Porto Rico; 1899; *Fish Hawk:* 1 young (24151). Arroyo; February 3 and 4; 1 male, 2 females (24153). Arroyo, on lighthouse reef; February 3; 1 female, 1 young (24152).

St. Thomas, West Indies (Copenhagen Mus.).

St. John, West Indies (Copenhagen Mus.).

St. Croix, West Indies (Copenhagen Mus.).

Fox Bay, Colon, Panama: January 20, 1912; Meek and Hildebrand, Smithson. Biol. Surv.; 1 ovigerous female (56538).

Klein Bonaire, Dutch West Indies; among coral rocks, in tide pools; July 11, 1905; J. Boeke; 1 female (42959), 1 female (Leiden Mus.).

Curaçao: Great Bay, Wacao; one-half fathom, among algae; October 3, 1905; 1 male (Leiden Mus.). Caracas Bay; April 8, 1920; C. J. van der Horst; 8 males, 7 females (Amsterdam Mus.), 2 males, 2 females (56862). West Point; May 14, 1920; C. J. van der Horst; 4 males, 2 females (1 ovigerous) (Amsterdam Mus.).

Puerto Cabello, Venezuela: F. Meinert (Copenhagen Mus.).

Mamanguape stone reef, Brazil: June 22, 1899; A. W. Greeley, Branner-Agassiz Exped.; 1 female (25752).

Pernambuco, Brazil (?); 1875–1877; R. Rathbun, Hartt Explorations; 1 male, 1 female (19946).

Boa Viagem, Brazil, stone reef 5 miles S. of Pernambuco; 1899; A. W. Greeley, Branner-Agassiz Exped.; 1 female (Stanford Univ.).

Mar Grande, Bay of Bahia, Brazil; 1875–1877; R. Rathbun, Hartt Explorations; 1 female (U.S.N.M.).

Guaraparim, Brazil; Thayer Exped.; 1 ovigerous female (2035, M. C. Z.).

Rio de Janeiro, Brazil (Copenhagen Mus.).

Copacabana, Rio de Janeiro, Brazil; Carlos Moreira; 1 male, 1 young female (56010).

Rat Island, Rio de Janeiro, Brazil; 3 males, 2 females (1 ovigerous) (2038, M. C. Z.).

Magdalena Bay, Lower California, Mexico: 1 male (Mus. San Diego Nat. Hist. Soc.).

Perico Island, Panama: October 26, 1904; *Albatross;* 1 male (33394).

Bay of Sechura, Peru: About half way between Bayovar and Matacaballo; 5 to 6 fathoms; April 10, 1907; R. E. Coker; 1 female (40454), received from Peruvian Government.

Near Callao, Peru: 5 specimens (2118, M. C. Z.).

Chincha, North Island, Peru: June 18, 1907; R. E. Coker; 1 male, 1 female (Peruvian Government); 1 male, 2 females (40455), received from Peruvian Government.

Chincha Islands, Peru: R. C. Murphy; 1 very young (Brooklyn Mus.).

Paracas Bay, Peru: U. S. C. S. S. *Hassler;* 1 male (2036, M. C. Z.).

Caldera, Chile: U. S. C. S. S. *Hassler;* 1 ovigerous female (2037, M. C. Z.).

Genus EPIALTUS Milne Edwards

Epialtus MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 344 (part); type, *E. bituberculatus* Milne Edwards; type specified by Miers, Journ. Linn. Soc. London, vol. 14, 1879, p. 650.—A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 138 (part).—MIERS, Journ. Linn. Soc. London, vol. 14, 1879, p. 650 (part; *Antilibinia* excluded).

Carnifex GISTEL, Naturg. Thierreichs, Stuttgart, 1848, p. IX; substituted for *Epialtus* Milne Edwards, thought to be preoccupied by *Ephialtes* Gravenhorst.

Carapace broad, subpentagonal or oblong, almost smooth, with two lateral, more or less laminate projections, sometimes very largely developed. Rostrum broad, triangular or oblong, entire or bilobed at tip. Eyes small. Preorbital tooth either present or absent;

postorbital small, minute, or wanting. Basal article of antenna triangular; movable part concealed beneath rostrum. Chelipeds of male strong; fingers either gaping or in contact; tips excavate or spoon-shaped. Ambulatory legs subcylindrical, diminishing successively in length from first to fourth; propodites sometimes with an inferior tooth or bunch of setae; dactyli with two rows of spinules beneath. Abdomen of male with six or seven segments, of female with five or seven segments. Small species.

Found on both sides of the American continent, from southern California to Chile and from northern Florida to the State of Santa Catharina, Brazil. Bermudas (Verrill). South Africa (Stebbing).

The subdivision of the motley genus *Epialtus* was suggested by A. Milne Edwards and by Miers.[27] The former went so far as to make three subgeneric divisions which he formed on two characters, the absence or presence of lobes on the rostrum and of a tooth on the lower margin of the propodites of the legs. This grouping would bring together species known to-day which differ widely in other respects and would separate other species which are in the main closely related. It is possible, however, to regroup the species on general characters. On this basis I have placed the three large oval species of similar aspect, occurring on the west coast of America, in the genus *Taliepus* (subgenera Nos. 2 and 3 of A. Milne Edwards, exclusive of *E. productus*). *E. productus* is more closely related to *Pugettia* than to true *Epialtus* and has been transferred to that genus.

This leaves in *Epialtus* numerous small forms which are wonderfully diversified, but indubitably of one genus.

The species with bilobed rostrum appear to be derived from those with simple rostrum, and those rostra which approach an oblong shape are more likely to be divided than those which are triangular or linear. *E. dilatatus* shows the simplest form of bilobed rostrum, the lobes so shallow that Milne Edwards, while figuring the emargination, yet groups the species among those with entire and obtuse rostra. The character of the propodal tooth may be the result of environment, the habit of clinging to algae having perhaps required a means of attachment afforded by subchelate ambulatories. At present we know too little of the relative habits of *E. bituberculatus* and *E. brasiliensis* to determine why, with similar carapaces and chelipeds, one should have slender, unarmed propodites and the other, stout propodites provided with a strong, digital tooth.

Various forms allied to *bituberculatus* have been described in the past but their relative value has been in doubt owing to intermediates. In recent years the collection in the National Museum has increased to such an extent that it is possible to say, with a fair degree of probability, that certain forms are specifically distinct, while others showing minor but rather constant differences, not correlated with geographical distribution, are designated as *formae*.

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[27] Journ. Linn. Soc. London, vol. 14, 1879, p. 650.

KEY TO THE AMERICAN SPECIES OF THE GENUS EPIALTUS

A^1. Propodites of ambulatory legs without a tooth on lower surface.
B^1. Rostrum simple, margin entire or nearly so.
C^1. Rostrum not dorsally carinate.
D^1. Tip of rostrum either rounded or truncate, not spiniform.
E^1. Carapace with a very shallow sinus between lateral lobes. Hand of male high. Preorbital angles obtuse. Tip of rostrum rounded. **bituberculatus**, p. 148.
E^2. Carapace with a deep sinus between lateral lobes.
F^1. Rostrum narrow. Hand of male elongate. Preorbital angles sharp.
G^1. Rostrum very narrow, sides parallel, tip subtruncate, with faint indication of two lobes------------**longirostris**, p. 151.
G^2. Rostrum a little wider, tip slightly arcuate in dorsal view. **longirostris forma portoricensis**, p. 151.
F^2. Rostrum broad. Branchial lobe acute, hepatic lobe rounded.
G^1. Legs long and very slender, especially the first pair. Postorbital part of carapace nearly one and a half times as wide as long-----------------------------------**bermudensis** [28]
G^2. Legs stout and shorter than in G^1. Postorbital part of carapace about one and a fourth times as wide as long. Margin of hepatic lobe crenulate------------------**crenulatus**, p. 158.
D^2. Tip of rostrum spiniform below. Upper crest of palm laminiform. **sulcirostris**, p. 150.
C^2. Rostrum dorsally carinate. Carapace widest at hepatic regions. Cardiac region conical----------------------------**kingsleyi**, p. 152.
B^2. Rostrum either bilobed or bidentate.
C^1. Rostrum short; carapace in front of anterior margin of hepatic lobe much shorter than behind the same margin; hepatic lobe much larger than branchial lobe.
D^1. Hepatic lobe directed more or less forward; rostrum oblong; no tuft of hair on propodites of legs----------------------**hiltoni**, p. 156.
D^2. Hepatic lobe not directed forward; rostrum narrowing anteriorly; a tuft of hair on propodites of legs----------------**dilatatus**, p. 153.
C^2. Rostrum long; hepatic and branchial lobes more nearly of a size; a tuft of hair on propodites of legs.
D^1. Carapace widest across branchial regions; length in front of hepatic lobes nearly as great as behind the same line. **dilatatus forma elongata**, p. 154.
D^2. Carapace about equally wide across hepatic and across branchial regions; length in front of hepatic lobes greater than, or nearly as great as, behind the same line------------------**minimus**, p. 155.
A^2. Propodites of ambulatory legs with a tooth on lower surface.
B^1. Rostrum triangular, simple. Carapace subtriangular-**brasiliensis**, p. 149.
B^2. Rostrum oblong, with bilobed tip------------------**peruvianus**, p. 157.

Species on both sides of the continent: *bituberculatus*.

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[28] Not American. Verrill, Trans. Connecticut Acad. Sci., vol. 11, 1901, p. 16, pl. 1, fig. 1.

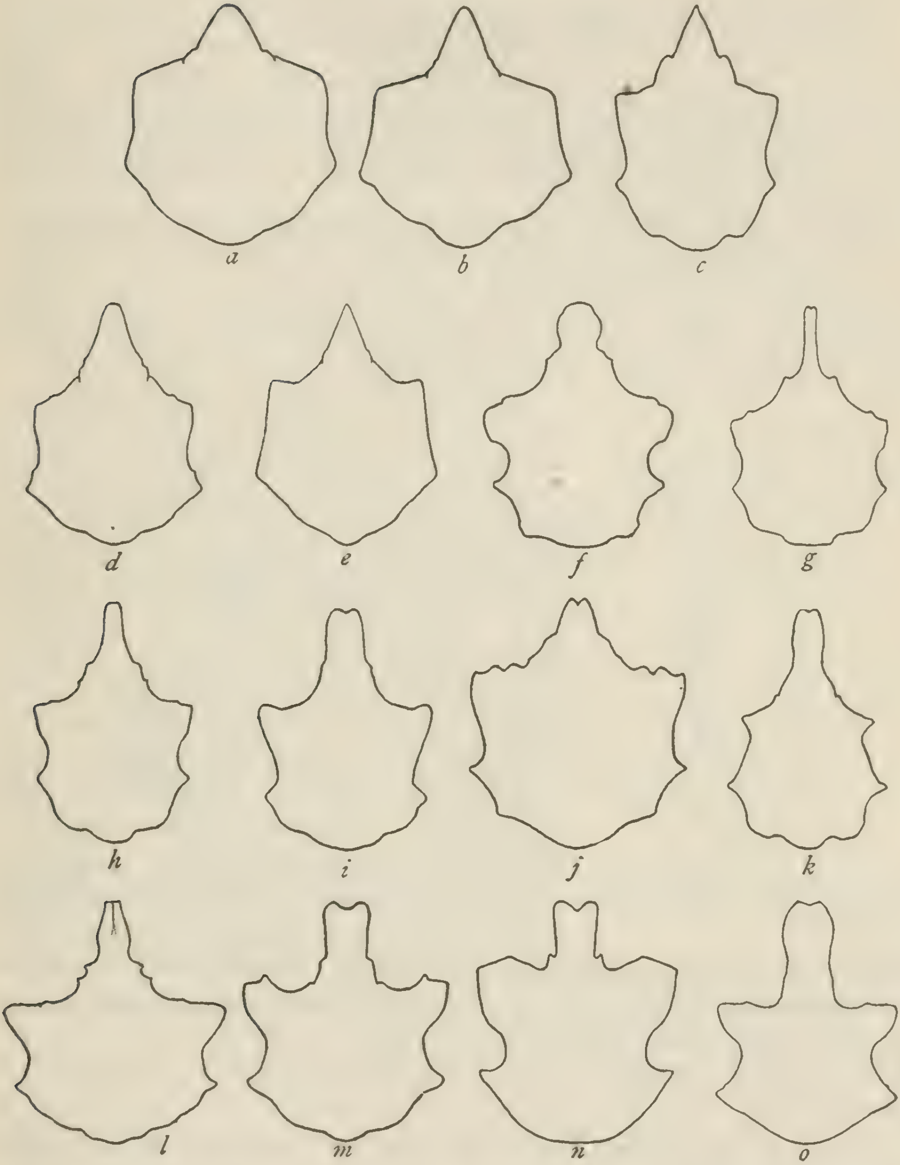

Fig. 53.—Epialtus, outlines of the carapace of different species. *a.* bituberculatus, male, Chile, × 3.5, after A. Milne Edwards. *b.* bituberculatus, female, Chile, × 2.8, after A. Milne Edwards. *c.* sulcirostris, male (47112), 5.7 mm. long. *d.* brasiliensis, male (56011), 6.6 mm. long. *e.* brasiliensis, 13.7 mm. long, after Dana. *f.* crenulatus, female (18135), 6.4 mm. long. *g.* longirostris, female (43019), 7 mm. long. *h.* longirostris forma portoricensis, male (24154), 5.7 mm. long. *i.* peruvianus, male (54208), 4.8 mm. long. *j.* dilatatus, female, St. Thomas, after A. Milne Edwards. *k.* dilatatus forma elongata, male (47090), 11.5 mm. long. *l.* kingsleyi, male holotype, 7.7 mm. long. *m.* hiltoni, male, holotype, 13.6 mm. long. *n.* hiltoni, male, Laguna, 16.1 mm. long. *o.* minimus, male, Patos Island, 21 mm. long.

EPIALTUS BITUBERCULATUS Milne Edwards

Plate 45, figs. 3 and 4

Epialtus bituberculatus MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 345, pl. 15, fig. 11 (type-locality, Chile; type in Paris Mus.).—GIBBES, Proc. Amer. Assoc. Adv. Sci., 3rd meeting, 1850, p. 173 [9].—A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 139 (part), pl. 27, figs. 1–1*d*, 2–2*e*, 3–3*c*.—RATHBUN (part), Proc. U. S. Nat. Mus., vol. 17, 1894, p. 67; Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 60; Harriman Alaska Exped., vol. 10, 1904, p. 173.

Epialtus affinis STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1859, p. 49 (type-locality, Indian River, Florida; type not extant); Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 128.

Diagnosis.—Rostrum simple. Lateral margin with a very shallow sinus between the lobes. Preorbital angles obscure. Hand high.

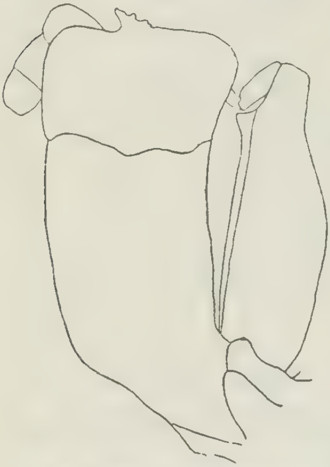

FIG. 54.—EPIALTUS BITUBERCULATUS, MALE (24849), MAXILLIPED, × 16

Description.—Carapace subpentagonal; two tubercles on gastric region; two lateral lobes, one hepatic, the other branchial; carapace widest across the branchial lobes; anterior margin of hepatic lobes oblique. Preorbital angles scarcely marked; postorbital teeth minute. Rostrum triangular, extremity simple, obtuse. (Fig. 53, *a*, *b*.)

Chelipeds of adult male strong. Inner margin of merus and carpus laminate; two crests on outer surface of carpus. Palm very high at distal end, compressed, upper edge acute. Dactylus with a very large tooth in the gâpe of the fingers. Legs slender, a tuft of hairs on lower border of penultimate article, occasionally occupying a slight prominence. Body and appendages covered with a coat of short, brown pubescence. Fourth and fifth abdominal somites united in male, fourth, fifth and sixth in female.

Measurements.—Male (19944), length of carapace 11.8, width 8.7 mm.

Range.—From Indian River, Florida, to Desterro, Brazil; Chile (Milne Edwards).

Material examined.—

Key West, Florida; February 4, 1901; B. A. Bean and W. H. King; 1 male, 2 females (24849).

Porto Rico; 1899; *Fish Hawk:* Arroyo; February 3; 1 male, 5 young (24157); on lighthouse reef, 1 young (24156). Fajardo; February 17; 1 female (24158).

Fox Bay, Colon, Panama; January 20, 1912; Meek and Hildebrand, Smithson. Biol. Surv.; 1 ovigerous female (56535).

Sabanilla, Colombia; March, 1884; *Albatross;* 1 male (18131).

Pernambuco (?), Brazil; 1876–1877; R. Rathbun, Hartt Explorations; 1 male, 1 female (19944).

EPIALTUS BRASILIENSIS Dana

Plate 220, fig. 1

Epialtus brasiliensis DANA, U. S. Explor. Exped., vol. 13, Crust., pt. 1, 1852, p. 132; atlas, 1855, pl. 6, fig. 1 (type-locality, Rio Janeiro, Brazil; type not extant).—MOREIRA, Bull. Soc. Zool. France, vol. 45, 1920, p. 126.

Diagnosis.—A large tooth on propodites of last three legs. Rostrum simple. Anterior margin of hepatic lobe transverse (fig. 53, *d, e*).

Description.—Carapace and chelipeds much as in *E. bituberculatus;* the anterior margin of the hepatic lobe is transverse instead of sloping backward and outward. The legs are much stouter than in *bituberculatus* and the last three pairs also very short, the propodite bearing a large tooth on the lower margin near the proximal end.

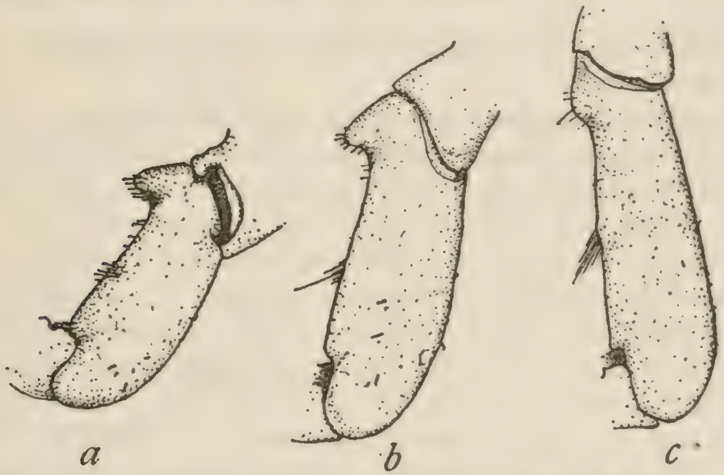

FIG. 55.—EPIALTUS BRASILIENSIS, MALE (56011), PROPODUS OF LAST THREE LEGS, × 18. *a.* FOURTH LEG. *b.* THIRD LEG. *c.* SECOND LEG

Color (from figure).—Natal brown, with a large triangular patch in center of carapace, and also the two gastric tubercles, colored a pale vinaceous-fawn.

Measurements (from Dana's figure).—Male, type, length of carapace about 13.7, width about 10.7 mm.

Locality.—Known only from Rio de Janeiro and vicinity. Along the seashore, among seaweed (Dana); in *Fucus natans* (Moreira).

Material examined.—Copacabana, Rio de Janeiro, Brazil; Carlos Moreira; 1 male, 1 immature female (56011).

Variation.—The specimens at hand are small, the larger one, male, 6.6 mm. long, little more than half as large as the male figured by Dana. The propodites of the last three legs are furnished with a basal protuberance which is much smaller than in the type and is directed not distad but normal to the article; the tubercle is smallest on the second ambulatory and largest on the fourth. The rostrum is faintly bilobed at tip. The anterior margin of the hepatic region slopes backward and outward and bears a small tubercle not far from the antero-lateral angle; the outer or anterior margin of the branchial lobe likewise has a tubercle about the same distance from the postero-lateral angle. These characters may represent age variations.

EPIALTUS SULCIROSTRIS Stimpson

Plate 46, fig. 3; plate 47, fig. 2

Epialtus sulcirostris Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 198 [70] (type-locality, Cape St. Lucas; cotype in Paris Mus.).—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 141, pl. 27, figs. 6–6*b*.

Diagnosis.—Rostrum thick, simple, tip spiniform below. Crest on hand laminiform.

Description.—Carapace nearly or quite as wide at hepatic as at branchial regions; hepatic angles squarer and more prominent than in *E. bituberculatus.* No postorbital tooth; a prominent preorbital lobe on which is a small tooth and in front of which the rostrum abruptly narrows. Rostrum thick, upper margins somewhat angled, tip produced below in a slender spine, shorter in the old than in the young; upper and lower surfaces a little concave; lower surface triangular in shape, narrower than upper, and separated from it by a deep lateral groove. (Fig. 53, *c*.)

Body and feet nearly smooth and naked. Chelipeds pubescent; upper crest of hand laminiform, very prominent above insertion of dactylus. Ambulatory legs slender, with no vestige of a thumb-process on the penult article, excepting in the first pair, where there is, at the distal fourth of the lower side, a small projection or socket bearing a few hairs.

Measurements.—Male, type, length of carapace 0.36 inch (9.1 mm.), width 0.27 inch (6.9 mm.). Male (47112), length 5.7, width 4 mm. Male (San Marcos), length 11, width 9 mm.

Range.—Lower California, from Santa Maria Bay to Cape St. Lucas and Gulf of California.

Material examined.—Santa Maria Bay, Lower California; March 18, 1911; *Albatross;* 1 small male (47112), without chelipeds or legs.

San Marcos Island; on kelp; June, 1921; Johnson and Baker, California Academy Expedition; 2 males (Cal. Acad. Sci.).

EPIALTUS LONGIROSTRIS Stimpson

Epialtus longirostris Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 199 (type-locality, St. Thomas; cotype in Paris Mus.); Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 128.—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 141, pl. 27, figs. 5–5*c*.—Kingsley, Proc. Acad. Nat Sci. Philadelphia, 1879, p. 385.

Diagnosis.—Rostrum very narrow, truncate. Sides of carapace deeply bilobed. Arm cylindrical, hand long and narrow, fingers thick.

Description.—Postgastric and cardiac regions rather prominent. Carapace nearly as wide across hepatic as across branchial regions. Lateral sinus much deeper than in the three preceding species and deeper in male than in female. Hepatic lobe a little larger than branchial lobe, both acute. The two gastric tubercles are distinct. Preorbital angle strong, sharp; from it the rostrum rapidly narrows to a long, slender beak, which is rather thick, truncated at extremity, the anterior surface rectangular, about twice as wide as high. Postorbital tooth obscure, not projecting; a tubercle on anterior margin of hepatic lobe. (Fig. 53, *g*.)

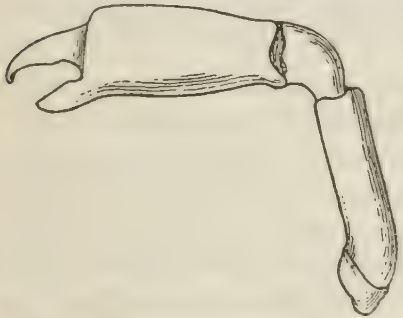

Fig. 56.—Epialtus longirostris, male (48742), left cheliped. The carapace is about 7.5 mm. long

Chelipeds without sharp margins; merus cylindrical; carpus with large tubercle on outer surface; palm elongate, little compressed, enlarging slightly toward distal end; fingers short and very stout, bent down, a small oval gape at base in male. Ambulatory legs slender, without tufts of hair on propodites except a slight one on first pair.

Measurements.—Male (48742), length (tip of rostrum lacking) 7.5, width 5.5 mm. Female (43019), length 7, width 4.8 mm.

Range.—Florida (Sarasota Bay and Key West), Cuba, Jamaica and St. Thomas.

Material examined.—

On reef Lavesos Italienos, opposite Cayo Lavesos, Cuba; 2 to 3 fathoms; Co. S. R.; station 14, *Tomas Barrera* Exped.; Henderson and Bartsch; 1 male (48742).

Jamaica; 1910; E. A. Andrews; 1 female (43019).

EPIALTUS LONGIROSTRIS forma PORTORICENSIS Rathbun

Epialtus longirostris forma portoricensis Rathbun, Proc. Biol. Soc. Washington, vol. 36, 1923, p. 72 (type-locality, Ensenada Honda, Culebra Island; holotype, Cat. No. 24154, U.S.N.M.).

Diagnosis.—Differs from typical *longirostris* only in the rostrum being slightly wider and less thick, and the tip slightly arcuate in dorsal view.

Description.—Of the two specimens the male is much smaller than the female. In both the carapace is just as wide at the hepatic as at the branchial regions, but the rostrum is a little wider in the female than in the male and its sides less parallel. (Fig. 53, *h*.)

Measurements.—Male, holotype, length of carapace 5.7, width 3.7 mm. Ovigerous female (24155), length 8.6, width 6.4 mm.

Range.—Known only from Porto Rican waters.

Material examined.—

Ensenada Honda, Culebra Island, Porto Rico; February 9, 1899; *Fish Hawk*; 1 male holotype (24154).

Mayaguez, Porto Rico; January 20, 1899; *Fish Hawk;* 1 ovigerous female (24155).

EPIALTUS KINGSLEYI Rathbun

Plate 45, fig. 1

Epialtus kingsleyi Rathbun, Proc. Biol. Soc. Washington, vol. 36, 1923, p. 71 (type-locality, Florida; holotype, Cat. No. 53068, U.S.N.M.).

Diagnosis.—Rostrum dorsally carinate, truncate. Carapace widest at hepatic regions. Cardiac region conical. (Fig. 53, *l*.)

Description.—Carapace nearly as broad as long, broadest across hepatic regions. Rostrum strongly deflexed, very high, broadest at its middle, from which it tapers to a truncate tip which is an equilateral triangle in front view; lower surface concave, upper surface much smaller, triangular, followed anteriorly by an acute ridge from which the sides fall obliquely. Orbital arches swollen, without tooth. A small postorbital tooth or angle, close behind the eye. Hepatic lobe much larger than branchial, extremity broadly rounded, anterior margin nearly transverse, bearing a low tooth or tubercle about half way between tip and eye, posterior margin convex. Interregional sinus deep. Branchial lobe small, sides concave, extremity narrow, acute. Cardiac region very high, conical; branchial region occupied chiefly by a smooth, round boss. The antennae fall short of end of rostrum. Third, fourth, and fifth segments of abdomen fused.

The cheliped is heavy for the size of the animal and is elongate, the palm gradually increasing in height from the proximal to the distal end, and, measured horizontally, is about twice as long as the strongly arched fingers; it is sparingly tuberculated on and near the upper margin. The merus is less obviously tuberculated, having one or two tubercles on each margin. The fingers gape widely, the propodal finger being curved well below the palm; at the proximal third of the prehensile margin of the dactylus, there is a small tooth.

Measurements.—Male, holotype, length of carapace 7.7, greatest width (hepatic) 7.2, branchial width 6.7 mm.

Range.—Florida.

Material examined.—Florida; exact locality not given; A. S. Packard, collector; 1 male holotype (53068); presented by J. S. Kingsley to the Boston Society of Natural History.

EPIALTUS DILATATUS A. Milne Edwards

Plate 45, fig. 2

Epialtus dilatatus A. Milne Edwards, Crust. Rég. Mex., 1878, p. 140, pl. 27, figs. 4–4*b* (type-locality, St. Thomas; type in Paris Mus.).

Epialtus bituberculatus Rathbun, Bull. Lab Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 255.

Diagnosis.—Rostrum slightly bilobed. Hepatic lobe larger than branchial. Preorbital tooth distinct (fig. 53, *j*).

Description.—According to A. Milne Edwards, this species is distinguished from *E. bituberculatus* by the carapace wider anteriorly, the hepatic expansions being much more developed and limited anteriorly by a sinuous border, the rostrum wider, shorter, and slightly depressed on the median line above; this depression is continued below where it is limited by two crests which unite behind in an acute angle. Length of female 10.5 mm., width 8 mm. (A. M. E.)

A specimen in hand, also female (15204), resembles figure 4 cited; the anterior border of the hepatic expansion is transverse but its antero-lateral corner is rounded, the rostrum is a little longer and less triangular, the preorbital tooth is small but distinct.

Five other smaller specimens which seem to belong here show the anterior hepatic margin directed more or less backward; not only is this margin sinuous, but the margin of the lateral sinus may be also; the rostrum varies from subtriangular, as figured by Edwards, to suboblong; the amount of emargination is variable, but is always insignificant.

Chelipeds, so far as observed, moderate; merus not cristate; carpus with four longitudinal crests; manus slightly enlarged distally, upper margin blunt, defined by a depression on either side; fingers short and stout. A slight tuft of hair on the lower margin of the propodites of the ambulatories is inconspicuous. Fourth and fifth abdominal segments of male and fourth, fifth, and sixth segments of female coalesced.

Measurements.—Female (15204), total length of carapace 10.2, hepatic width 8.4, branchial width 9 mm.

Range.—West Florida; Yucatan; Bahamas; Porto Rico; St. Thomas.

Material examined.—

North Key section, Florida; lat. 29° 05′ 00″ N.; long. 83° 22′ 30″ W.; 5.5 fathoms; sdy. rky. Co.; temp. 15.5° C.; November 27, 1901; station 7177, *Fish Hawk;* 1 female (47085).

Bird Key, Florida; April 8, 1889; *Grampus;* 1 ovigerous female (15204).

Dry Tortugas, Florida; Edward Palmer; 1 female (18132).

Florida (?); 1 male (14465).

Off Mujeres Island, Yucatan; 12 fathoms; crs. cor. S.; 1 small, immature female (2022, M. C. Z.), identified by A. Milne Edwards.

Harbor Island, Bahamas; July 8, 1893; State Univ. Iowa Exped.; 1 male (11866, Mus. S. U. I.).

Porto Real, Porto Rico; January 27, 1899; *Fish Hawk;* 1 male, 1 female, 1 young (24159).

EPIALTUS DILATATUS forma ELONGATA Rathbun

Plate 48

Epialtus dilatatus forma elongata Rathbun, Proc. Biol. Soc. Washington, vol. 36, 1923, p. 72 (type-locality, off Duck Key, Florida; holotype, Cat. No. 47090, U.S.N.M.).

Diagnosis.—Rostrum elongate, slightly bilobed. Hepatic and branchial lobes similar. Preorbital tooth obscure (fig. 53, *k*).

Description.—Similar to *E. dilatatus* but with a longer rostrum and with lateral lobes subequal in size and shape, the hepatic lobe having an antero-

Material examined of Epialtus dilatatus forma elongata

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
Florida:	° ′ ″	° ′ ″			°C						
North Key section	28 52 15	83 24 00	7.5	R. Co.	16.2	Nov. 28, 1901	7183	*Fish Hawk*	1♂	47086	
St. Martin's section	28 36 00	82 57 00	3	sdy. grsy.	11.6	Jan. 17, 1902	7223	do.	1♀	47087	
Highland section	27 55 30	82 51 30	3	hrd. S. brk. Sh.	15.8	Jan. 28, 1902	7249	do.	1♂ 2♀	47088	
Key West						Dec. —, 1883		D. S. Jordan	1♂	18134	
Do						Feb. 4, 1901		B. A. Bean and W. H. King.	3 ovig. ♀	55694	
			Feet								
North of Knights Key Channel.	5/8 mile N. 1/2 E. of Hog Key.		7	rky		Jan. 22, 1903	7419	*Fish Hawk*	1♀	47089	
Hawk Channel	1/2 mile SE. by S. of SE. end of Duck Key.		14	rky		Jan. 27, 1903	7429	do.	1♂	47090	Holotype.
Florida Bay						Jan. 29, 1903	(1)	do.	1 ovig. ♀	47091	
West coast of Florida								Henderson and Simpson.	1♀	18133	

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[1] Between stations 7432 and 7442.

lateral angle, either acute, right, or a little obtuse; there is only one exception, a female (18133), in which the hepatic lobe is rounded. As in typical *dilatatus*, the carapace is widest at the branchial lobes. The rostrum is suboblong, narrowing slightly at distal end, where there is a shallow notch; one exception, a full grown male (47088), has what appears to be an abnormal rostrum, of great length, increasing in width distally, terminal notch a strong V. Preorbital tooth feeble, obsolescent. Palm of cheliped widening considerably toward distal end; propodal finger arched downward, forming a wide gape, into which just behind the middle one tooth of moderate size projects from the dactylus. Otherwise as in typical *dilatatus*.

Measurements.—Male, holotype, total length of carapace 11.5 branchial width 8.3, hepatic width 6.7 mm.

Range.—West and South Florida.

Material examined.—See table, page 154.

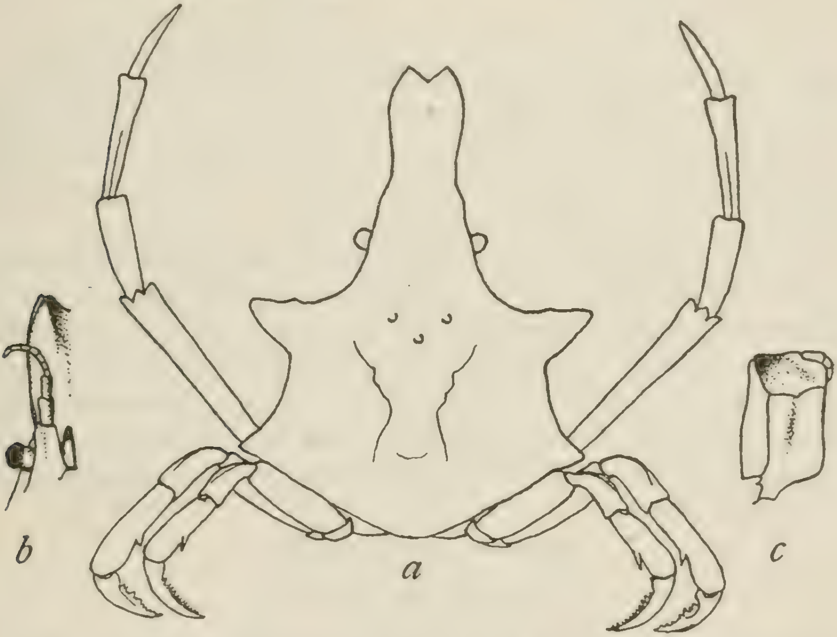

Fig. 57.—Epialtus minimus. *a*, *b*, and *c* from drawings by J. S. Kingsley of a cotype. *a*. Carapace and three legs, × 4. *b*. Anterior portion, ventral view, × 4. *c*. Maxilliped, enlarged

EPIALTUS MINIMUS Lockington

Plate 47, fig. 1

Epialtus minimus Lockington, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 77 [15] (type-localities, Port Escondido and San Jose Island. both in the Gulf of California; types not extant).—Kingsley, Proc. Acad. Nat. Sci. Philadelphia, vol. 31, 1879 (Mar. 9, 1880), p. 385.

Diagnosis.—A bunch of setae at middle of propodites of ambulatories. Hepatic and branchial lobes subequal. Rostrum long, bilobed (fig. 53, *o*).

Description.—Antero-lateral margin of carapace with two large triangular lobes; the hepatic lobe has a shallow tooth on its anterior margin; this margin is transverse, and its distance from the end of the rostrum either exceeds (as in Kingsley's figure), or is less than, its distance from the posterior margin of the carapace. Rostrum elongate-oblong, bilobed at tip. Cheliped strong, longer than first ambulatory. Legs slender, cylindrical, penultimate article bearing below distal to its middle and also at its proximal end (save in first pair), a bunch of setae which simulates a spine.

Measurements.—Male, cotype, length of carapace 14, width 11, length of cheliped 18 mm.; female, cotype, length 14, width 12 mm. (Lockington). Male (Patos Island), median length 21, posterior width 16 mm.

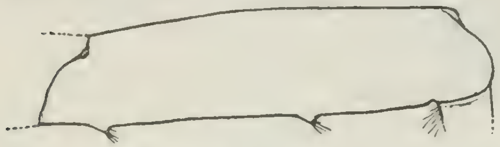

Fig. 57 *d*.—Propodus of second right leg to show two tufts of hair, male, San Marcos, × 12

Range.—West coast of Mexico, in Gulf of California. Found at low tide under stones and in coral (Lockington).

Material examined.—Mexico: Patos Island, Gulf of California; at anchorage, 4.5 fathoms; May 23, 1921; Fred Baker, California Academy Expedition; 1 male, paper-shell (Cal. Acad.). San Marcos Island; on kelp; June, 1921; Johnson and Baker, California Academy Expedition; 1 male (Cal. Acad.).

Remarks.—Although the type-specimen is not extant, it is possible to determine the species from pencil drawings (fig. 57, *a*, *b*, *c*) made by Kingsley from what was probably a cotype. By comparing these with the specimens in hand, it became certain that the propodal articles of the ambulatories are not armed with a spine as represented by Lockington and Kingsley but are furnished with setae crowded together in a socket and of varying length so as to form a pointed mass simulating a spine.

EPIALTUS HILTONI Rathbun

Plate 46, figs. 1 and 2

Epialtus hiltoni Rathbun, Proc. Biol. Soc. Washington, vol. 36, 1923, p. 72 (type-locality, Laguna Beach, California; holotype, Cat. No. 50599 U.S.N.M.).

Diagnosis.—Rostrum oblong, bilobed. Hepatic lobe widespread, with a tooth or tubercle on anterior margin. Hand very long, fingers short.

Description.—Carapace high in median region; lateral wings broad, ascending; anterior or hepatic lobe much the larger, intervening sinus deep; width at branchial regions a little greater than, or just equal to, that at hepatic regions. The posterior margin of the hepatic lobe is convex, the anterior is oblique (in the half grown) to nearly transverse (in the full grown); on the anterior margin near its middle there is a lobe or tooth, very small in the half grown but increasing until it equals the tooth at the antero-lateral angle of the lobe. Branchial lobe triangular, acute or subacute. Preorbital tooth distinct, outstanding, tuberculiform; postorbital tooth inconspicuous, not projecting beyond carapace margin and indicated only by a closed fissure. Rostrum broadly oblong, sides subparallel, extremity bilobed, median sinus broad, shallow. (Fig. 53, *m*, *n*.)

Chelipeds of moderate size; merus very bluntly angled; carpus and manus with a subacute, outer carina; a tubercle on upper surface of carpus; manus elongate, not widening much until just before the fingers, which are short, very wide, deflexed, outer margin acutely carinate, gape narrow, a large tooth on the dactyl within the gape. Ambulatory legs rather stout; two tubercles on lower margin of proximal half of merus of first leg; propodites without tooth or tufts of hair. Third, fourth, and fifth segments of male abdomen fused.

Measurements.—Male (Laguna Beach), median length 16.1, anterior width 14.5, posterior width 15 mm. Male holotype (50599), median length 13.6, total length 14, anterior width 12.2, posterior width 12.4 mm.

Range.—California: Laguna Beach and Santa Catalina Island.

Material examined.—Laguna Beach, Orange County; William A. Hilton, Pomona College; 1 male, holotype (50599), 1 male returned to sender.

Catalina Harbor, Santa Catalina Island; W. H. Dall; 1 male (18136).

EPIALTUS PERUVIANUS Rathbun

Epialtus peruvianus RATHBUN, Proc. Biol. Soc. Washington, vol. 36, 1923, p. 72 (type-locality, Chincha Islands, Peru; holotype, Cat. No. 54208, U.S.N.M.).

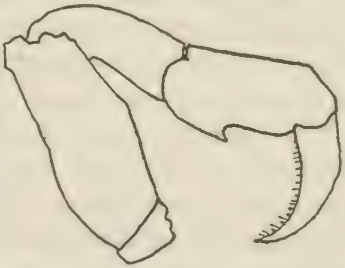

FIG. 58.—EPIALTUS PERUVIANUS, MALE (54208), LOOSE LEG. THE CARAPACE IS 4.8 MM. LONG

Diagnosis.—A tooth at base of propodites of ambulatories. Carapace very uneven. Hepatic lobe large, branchial small. Rostrum oblong, bilobed (fig. 53, *i*).

Description of male.—Median region separated from hepatic and branchial regions by a deep furrow; a transverse, depressed area across the carapace embraces anterior edge of hepatic lobes; a sharp, median, interorbital sulcus. Hepatic lobe very large, recurved, anterior margin transversely concave, outer angle lobiform, prominent, posterior margin slightly convex; branchial lobe very small, acute, sides concave. Orbital arch swollen, margin forming an angle, not a tooth, with the margin of the rostrum. Rostrum deflexed, thin, oblong, sides parallel to near the tip, where they are thick, recurved and convergent; tip bilobed, lobes small, sinus wide. Cheliped of young male shorter than first leg, fingers not gaping.

First and second legs (others missing) similar, stout, merus laminate above, and two or three toothed, the tooth at distal end prominent, upstanding; propodus with a strong tooth below, at proximal end, similar to that in *E. brasiliensis.*

Measurements.—Male, holotype, length of carapace 4.8, greatest width 3.5 mm.

Range.—Known only from the type-locality.

Material examined.—Chincha Islands, Peru; November 30 to December 1, 1919; Robert Cushman Murphy, collector; 1 male, holotype (54208); received from the Brooklyn Museum.

EPIALTUS CRENULATUS Rathbun

Epialtus crenulatus RATHBUN, Proc. Biol. Soc. Washington, vol. 36, 1923, p. 71 (type-locality, Lower California; holotype, 1 ovigerous female; Cat. No. 18135, U.S.N.M.).

Diagnosis.—An *Epialtus* with large hepatic lobe, small, acute, branchial lobe, oblong, entire rostrum, and no tooth on propodites of legs.

Description.—The hepatic lobe is not advanced, the anterior margin transverse and forming with the outer margin a rounded lobe with crenulated edge. The rostrum is about as broad as long, sides arcuate for the most part, extremity truncate, with a faint indication of emargination; below there is a median furrow with a crest on either side. Preorbital tooth large, not projecting. Hepatic and branchial widths of carapace equal (fig. 53, *f*).

Cheliped of female short, palm short and stout. The first ambulatory is longer than the cheliped and noticeably longer than the other legs; propodites of last three provided with a tuft of hair at proximal end of lower margin.

Measurements.—Female, holotype, length of carapace 6.4, width 5 mm.

Range.—Known only from the type-specimen.

Genus MOCOSOA Stimpson

Mocosoa STIMPSON, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 128; type, *M. crebripunctata* Stimpson.—A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 137.

Carapace subpentagonal, tumid; rostrum subtriangular, obtuse, excavated below. Eyes large, immovable, filling the orbit. External antennae concealed beneath the rostrum and not reaching to its tip; basal article triangular, unarmed. External maxillipeds very broad, closing the buccal cavity; merus particularly short and broad, quadrate, with the outer angle much projecting outward, and the inner one rounded, not at all notched for the reception of the palpus; this last is short and stout, almost concealed by the merus. The third, fourth, and fifth segments of the male abdomen are coalesced.

Contains only one species.

MOCOSOA CREBRIPUNCTATA Stimpson

Plate 49, figs. 3 and 4

Mocosoa crebripunctata Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 128 (type-locality, off French Reef, Florida, 15 fathoms; holotype not extant).—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 137.—Rathbun, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 65.

Diagnosis.—Eyes immovable. Merus of outer maxillipeds not notched at inner angle. Rostrum subtriangular, subtruncate. Carapace lumpy.

Description.—Carapace very convex antero-posteriorly, naked, punctate and uneven; two prominences between the eyes, three on the gastric region of which the posterior is mesogastric, one large, bituberculate protuberance on the cardiac region, one on each hepatic, and three on each branchial region. Of the three branchial protuberances the most anterior is the largest; the two posterior are in a transverse line, the outermost being marginal and bearing a small tubercle at the postero-lateral angle of the carapace. Rostrum deflexed, slightly emarginate. The regular curve of the eye socket is interrupted by a very shallow, posterior tooth, which does not project outwardly and is scarcely evident in dorsal view; no preocular spine. Subbranchial region granulate.

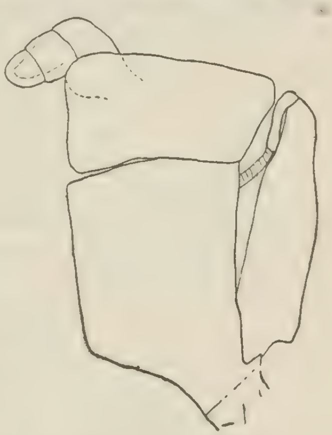

Fig. 59.—Mocosoa crebripunctata, male (18129), maxilliped. The carapace is 7 mm. long.

Chelipeds stout, longer than carapace; merus cylindrical, sparingly granulate; carpus subglobular. Manus slightly compressed, widening distally; propodal finger very short, stout, bent downward; dactylus longer, very deep at base, much deflexed; fingers spoon-shaped, when closed leaving a narrow slit, cutting edges dentate. Legs short, thick; merus armed with a few short blunt spines or tubercles arranged in two rows along upper surface; dactylus as long as preceding article, curved and gradually tapering.

Color.—Body of a strawberry color; upper surface of carapace iridescent. (Stimpson.)

Measurements.—Male (18129), length of carapace 7, posterior width 6.2, hepatic width 5.4, approximate length of cheliped 9, of last ambulatory leg 4 mm. Female (immature), holotype, length of carapace 0.2 inch (5 mm.), width 0.17 inch (4.3 mm.). (Stimpson.)

Range.—Florida Straits and Gulf coast of Florida. Depth, 15 to 27 fathoms.

Material examined.—Gulf of Mexico; southwest of Cape San Blas, Florida; lat. 29° 15′ 30″ N., long. 85° 29′ 30″ W.; 27 fathoms; G.; February 7, 1885; station 2372, *Albatross;* 1 male (18129). Only the body, the right cheliped and one of the second and of the fourth pair of legs are preserved.

Genus EUPLEURODON Stimpson

Eupleurodon Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 10, 1871, p. 98; type, *E. trifurcatus* Stimpson.—Miers, Journ. Linn. Soc. London, vol. 14, 1879, p. 650.

Euplorodon A. Milne Edwards, Crust. Rég. Mex., 1878, p. 141.

Allied to *Epialtus*, but with a depressed and uneven carapace; antero-lateral angles strongly prominent, forming projecting teeth directed forward, almost parallel to axis of body. Ambulatory legs strongly prehensile, with dentigerous penult articles. Size small.

West coast of America at Cape St. Lucas, Mexico, and Ferrol Bay, Peru.

KEY TO THE SPECIES OF THE GENUS EUPLEURODON

A¹. Carapace as wide between antero-lateral as between postero-lateral teeth. A small tooth between antero-lateral and postero-lateral tooth. No preocular tooth………………**trifurcatus**, p. 160.

A². Carapace narrower between antero-lateral than between postero-lateral teeth. No small tooth between antero-lateral and postero-lateral tooth. A preocular tooth………………**peruvianus**, p. 161.

EUPLEURODON TRIFURCATUS Stimpson

Eupleurodon trifurcatus Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 10, 1871, p. 98 (type-locality, Cape St. Lucas; holotype not extant).—Rathbun, Proc. U. S. Nat. Mus., vol. 38, 1910, pp. 535 and 572 (part).

Euplorodon trifurcatus A. Milne Edwards, Crust. Rég. Mex., 1878, p. 142.

Diagnosis.—Orbital arch without tooth. A small tooth on lateral margin between the two large teeth or lobes.

Description.—Carapace with a deep depression in front of the gastric region and one on either side of the cardiac region, which with the gastric region forms a prominent median ridge. Branchial region depressed, with a tubercle near the postero-lateral angle. Teeth and prominences of the carapace generally setose. Rostrum half as long as the postfrontal part of the carapace and one-third as broad as long, flattened, truncate, and emarginate at extremity. Tooth at antero-lateral angle half as long as rostrum and curving forward; the distance between the tips of these equals the greatest width of the carapace, and is one-third greater than the middle width. There is a small tooth on the lateral margin behind the antero-lateral angle. Orbital margin arched but not toothed. Feet with an angular or dentated carpus. (After Stimpson.)

Measurements.—Female, holotype, length of carapace 0.31 inch (7.9 mm.), width between tips of antero-lateral teeth 0.25 inch (6.3 mm.). (Stimpson.)

Range.—Known only from the type-locality, Cape St. Lucas, Lower California, Mexico. The Peruvian specimen formerly supposed to be a variant of Stimpson's species is now considered a distinct species.

EUPLEURODON PERUVIANUS Rathbun

Plate 49, figs. 5 and 6

Eupleurodon trifurcatus RATHBUN, Proc. U. S. Nat. Mus., vol. 38, 1910, pp. 535 and 572 (part), pl. 49, fig. 5. Not *E. trifurcatus* Stimpson.

Eupleurodon peruvianus RATHBUN, Proc. U. S. Nat. Mus., vol. 64, art. 14, 1924, p. 2 (type-locality, north end of Ferrol Bay (Chimbote), Peru; holotype, Cat. No. 40462, U.S.N.M.).

Diagnosis.—Orbital arch provided with a preocular tooth. No small tooth on lateral margin between the two large teeth or lobes.

Description.—Carapace pentagonal; depressions as in *trifurcatus.* A transverse row of tubercles across the gastric region above the depression, the inner pair larger than the outer pair; a large tubercle near the postero-lateral angle; a smaller one in the branchio-cardiac furrow; a still smaller tubercle on the mesogastric and the intestinal regions, and three on the cardiac region forming a triangle pointing backward. Teeth and prominences of carapace setose. Lateral teeth or lobes recurved, blunt at tips; width of carapace at middle of antero-lateral lobes greater than at tip of lobes and appreciably less than width between tips of postero-lateral lobes. Rostrum a third as long as the postfrontal part of the carapace and one-half as broad as long, lateral margins raised, extremity incised for about one-fourth of its length to form two rounded lobes. Eyestalks flattened.

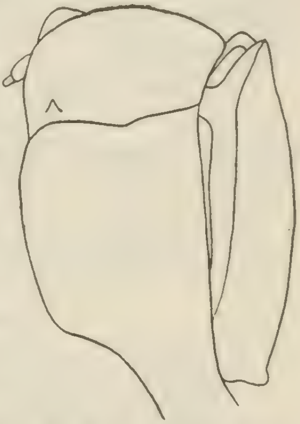

FIG. 60.—EUPLEURODON PERUVIANUS, FEMALE HOLOTYPE, MAXILLIPED. THE CARAPACE IS 10 MM. LONG

The antennae reach nearly to end of rostrum. The antennular cavity reaches to middle of rostrum, is not nearly filled with the antennules, and is very incompletely divided into two fossae. Merus of maxillipeds slightly notched at antero-internal angle; first article of palp flattened, angular, last two articles small and slender, hidden behind the merus. Carpus of cheliped nodose, merus and manus nodose at distal articulations; two low tubercles on upper margin of merus; propodal finger strongly deflexed, dentate; fingers stout, the dactylus with a basal tooth and near the tip a few smaller teeth. Dactyli of legs strongly falcate, finely dentate, the digital tooth of the propodus strong and with hairy tip.

A row of five tubercles on first segment of female abdomen.

Measurements.—Female, holotype, length of carapace to ends of rostrum 10, length of rostrum 2.2, greatest width of carapace 8.2 mm.

Range.—Peru; known only from the type-locality.

Material examined.—North end of Ferrol Bay (Chimbote), Peru; from rocks between tide lines; March 1; R. E. Coker, collector; received from the Peruvian Government; 1 ovigerous female, holotype (40462).

Genus TALIEPUS A. Milne Edwards

Taliepus A. Milne Edwards, Crust. Rég. Mex., 1878, p. 138 (subgenus of *Epialtus*) part; type not specified.
Epialtus of authors (part).

Type.—*T. nuttallii* (Randall).

Carapace broadly oval, convex in all directions, smooth, armed laterally with from two to four teeth, mostly small, and following the outline of the carapace. Postocular and preocular tooth small or absent. Rostrum inclined, sides convergent, tip bidentate. Antennae hidden, or partly visible at sides of rostrum; basal article subtriangular.

Chelipeds strong; fingers with tips excavate or spoon-shaped, gaping in the old male. Ambulatory legs stout, subcylindrical; dactyls strongly curved, two rows of spinules beneath. Large species.

Inhabits the west coast of America, from southern California (Santa Barbara) to Patagonia. Rio de Janeiro (Bell).

KEY TO THE SPECIES OF THE GENUS TALIEPUS

A¹. Propodites of ambulatory legs without a tooth on lower surface. Two small, thick, blunt, lateral teeth on either side of carapace. No preorbital tooth. A small postorbital tooth ---------- **nuttallii**, p. 162.
A². Propodites of ambulatory legs with a tooth on lower surface. A preorbital, no postorbital tooth.
  B¹. Three lateral teeth on a strongly rimmed margin. Tooth of propodites small in adults, stronger in young ---------- **marginatus**, p. 164.
  B². Four lateral teeth. Tooth of propodites strong in adults -- **dentatus**, p. 165.

Species on both sides of the continent: *marginatus*.

TALIEPUS NUTTALLII (Randall)

Plates 50 and 51

Libinia nuttallii Randall, Journ. Acad. Nat. Sci. Philadelphia, vol. 8, 1839 (1840), pl. 3.

Epialtus nuttallii Randall, Journ. Acad. Nat. Sci. Philadelphia, vol. 8, 1839 (1840), p. 109 (type-locality, Upper California; types, Cat. No. 598, Mus. Phila. Acad.).—Gibbes, Proc. Amer. Assoc. Adv. Sci., 3rd meeting, 1850, p. 173.—Stimpson, Journ. Boston Soc. Nat. Hist., vol. 6, 1857,

p. 458.—LOCKINGTON, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 77.—RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 572; Harriman Alaska Exped., vol. 10, 1904, p. 173.—HOLMES, Occas. Papers California Acad. Sci., vol. 7, 1900, p. 23.—SCHMITT, Univ. California Publ. Zool., vol. 23, 1921, p. 202, text-fig. 125.

Epialtus (*Taliepus*) *nutallii* A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 138.

Epialtus (*Antilibinia*) *nuttallii* RATHBUN, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 69.

Diagnosis.—Carapace ovate. No preorbital tooth. First lateral tooth not prominent.

Description.—Carapace ovate, convex antero-posteriorly and transversely, smooth. No preocular tooth, postocular tooth small. Lateral teeth small, subequal, blunt, the margins between them convergent anteriorly. Rostrum with strongly convergent sides, inclined downward, flattened or slightly concave above, and with an equilaterally triangular notch at the end. Antennae not reaching end of rostrum.

Chelipeds of old male very stout, unarmed, subequal to first leg; fingers gaping moderately for two-thirds of their length, a shallow lobe on the dactyl at middle of gape, extremities of fingers crenate. Legs stouter than in *Pugettia producta.*

Fifth segment of male abdomen longer than sixth.

Color.—Dark purplish, besprinkled with testaceous spots becoming large and somewhat ocellate behind, and still larger and brighter on the under side of the body (Randall).

Measurements.—Male (3108), total length of carapace 100.8, width 85.5 mm.

Range.—From Santa Barbara, California, to Magdalena Bay, Lower California.

Material examined.—

CALIFORNIA

Santa Barbara; 1880; D. S. Jordan; 1 large male (3108).

One-fourth mile west of Venice Pier, Venice, Santa Monica Bay; found inside live fish trap; December 7, 1912; *Anton Dohrn* (J. Ross Beck); 1 young (50308), from Venice Mar. Biol. Sta.

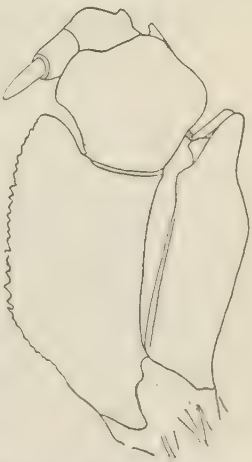

FIG. 61.—TALIEPUS NUTTALLII (50014), MAXILLIPED, × 2.63

San Pedro; on kelp; H. N. Lowe; 1 young male (23049).

Santa Catalina Island: Isthmus Harbor; November 27, 1913; *Anton Dohrn;* 1 female (50014), from Venice Mar. Biol. Sta. Catalina Harbor; 1874; W. H. Dall; 1 young female (14798). Avalon Bay; October 22, 1910; *Anton Dohrn* (P. S. Barnhart); 1 young (50309), from Venice Mar. Biol. Sta.

La Jolla; in kelp hold-fast on beach; September 19, 1918; W. L. Schmitt; 1 female (53978).

Point Loma; January 28, 1889; *Albatross;* 3 females (15517).

San Diego; H. Hemphill; 7 young females (18139).

California; T. Nuttall; 1 large male, 1 adult female, cotypes (598, Phila. Acad.). J. S. Kingsley; 1 young female (53064), from Boston Soc. Nat. Hist.

CALIFORNIA-MEXICAN BOUNDARY

Lat. 32° 32′ N., long. 117° 07′ W.; Monument 258, Mexican Boundary Survey; July 18, 1894; Dr. E. A. Mearns, U. S. A.; 1 female, encrusted with barnacles (18661).

LOWER CALIFORNIA, MEXICO

San Benito Island: July 25, 1896; A. W. Anthony; 1 male (19506). West of; March 9, 1911; *Albatross;* 1 young female (Amer. Mus.).

Natividad Island; August 3, 1896; A. W. Anthony; 1 female (19507).

Ballenas Bay; May 3, 1888; *Albatross;* 1 female (21904).

Magdalena Bay; March, 1917; C. R. Orcutt; 1 young (50655).

TALIEPUS MARGINATUS (Bell)

Plates 52 and 53; plate 220, fig. 2; plate 221

Epialtus marginatus Bell, Proc. Zool. Soc. London, vol. 3, for 1835 (1836), p. 173 (type-locality, "*ad oras Brasiliae*"; type not extant); Trans. Zool. Soc. London, vol. 2, 1836, p. 62, pl. 11, fig. 4, 4*i*, 4*j*, 4*k* (♀), pl. 13 (♂).—Heller, Reise *Novara*, Crust., Wien, 1865, p. 5.—Smith, Trans. Connecticut Acad. Sci., vol. 2, 1869, p. 33.—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 138.—Miers, Proc. Zoöl. Soc. London, 1881, p. 66.—Ortmann, Zool. Jahrb., Syst., vol. 7, 1893, p. 42.—Lenz, Zool. Jahrb., Suppl. 5, 1902, p. 756.—Rathbun, Proc. U. S. Nat. Mus., vol. 38, 1910, p. 534, pl. 36, fig. 2.—Aurivillius, K. Svenska Vet.-Akad. Handl., vol. 23, 1889, p. 43.

Epialtus (*Antilibinia*) *marginatus* Miers, Journ. Linn. Soc. London, vol. 14, 1879, p. 650.—Rathbun, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 69.

Diagnosis.—Propodites of legs armed below with a tooth. A preorbital tooth. Postorbital tooth obsolete.

Description.—Carapace very convex, suborbicular, save for the flat deflexed rostrum, smooth; lateral margin narrowly rimmed, the rim ending forward in a strong, antero-lateral tooth, pointing forward, and posteriorly with a slight thickening; a shallow obtusangled tooth or lobe at widest part. Posterior edge of orbit a little swollen, but without tooth. An acute hepatic tooth half way between the orbit and the larger antero-lateral tooth. Rostrum longer and narrower than in *T. nuttallii;* a small, blunt preocular tooth on either side; terminal emargination small, longer than its greatest width.

Chelipeds of old male longer than first ambulatory leg. Two tubercles on upper edge, and one on lower surface, of proximal half of arm; a tubercle on inner margin of ischium; a tooth at inner angle of wrist; fingers gaping for two-thirds their length, and armed in the gape with a few lobes or crenations which are more irregular than those at the extremity. Propodites of legs armed below near the distal end, with a tooth or lobe bearing a tuft of hair. The tooth increases in size from the first to the fourth pair; in the old male it is obsolescent and bare on the first leg. The dactyls while diminishing in length, increase in curvature from the first to the fourth.

Male abdomen narrower than in *T. nuttallii.*

Color.—Adult male, dark brown; young female, paler and reddish (Bell).

Measurements.—Male (40459), total length of carapace 100, width 80.4 mm.

Range.—From Independencia Bay, Peru, to Talcahuano (Miers) and Guajacan, Chile (Lenz). Galapagos Islands (Bell, A. Milne Edwards). Rio de Janeiro (Bell).

Material examined.—

Peru; R. E. Coker; gift of Peruvian Government: Independencia Bay; July, 1907; 2 carapaces (40461). Mollendo; taken in fish net near shore; July 23, 1908; 2 males (40459, 40460).

Chile: Caldera; June 14, 1863; Captain Putnam, 1 male, 1 female (2029, M. C. Z.). Valparaiso; U. S. Exploring Expedition, J. D. Dana; 1 male, 1 female (2372).

TALIEPUS DENTATUS (Milne Edwards)

Plates 54 and 55

?*Cancer xaiva* MOLINA, Saggio sulla storia naturale del Chili, 1782, p. 206 (type-locality, Chile; type not extant); French translation, 1789, p. 182.

Epialtus dentatus MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 345 (type-locality, Chile; type in Paris Mus.).—BELL, Trans. Zool. Soc. London, vol. 2, 1836, p. 62.—NICOLET, in Gay's Hist. Chile, vol. 3, 1849, p. 131.—CUNNINGHAM, Trans. Linn. Soc. London, vol. 27, 1871, p. 491.—TARGIONI TOZZETTI, Zool. *Magenta*, Crost., 1877, p. 18, pl. 2, figs. 1–4, 6–9, 11.—MIERS, Proc. Zool. Soc. London, 1881, p. 66.—AURIVILLIUS, K. Svenska Vet.-Akad. Handl., vol. 23, 1889, p. 42.—LENZ, Zool. Jahrb., Suppl. 5, 1902, p. 756.

Inachus mitis POEPPIG, Arch. f. Naturg., vol. 2, 1836, p. 141 (type-locality, "ad littora prope Valparaiso, Talcahuano, etc."; type not extant).—NICOLET, in Gay, Hist. Chile, vol. 3, 1849, p. 125.

Epialtus (*Taliepus*) *dentatus* A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 138.

Epialtus (*Antilibinia*) *dentatus* MIERS, Journ. Linn. Soc. London, vol. 14, 1879, p. 650.—RATHBUN, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 69.

Diagnosis.—Four lateral teeth. A preorbital tooth. A postorbital tubercle. Fingers of male narrowly gaping. Propodites of legs armed below with a slight tooth.

Description.—Carapace suborbicular, save for the rostrum, very convex in both directions, densely punctate and with four lateral teeth, the first three acute, the last one blunt, tuberculiform; two small, obscure tubercles on anterior part of gastric region. Rostrum with strongly convergent margins, bifid at extremity, notch narrow. Postocular lobule minute, formed by a thickening of the orbital rim, and separated by a sinus from an infraorbital lobule. Antennae not exceeding rostrum. Chelipeds of old male no longer than first leg; tubercles or stout spines on the upper surface near the proximal end and one or two smaller ones on the lower surface; carpus with a short, stout spine or tooth at the antero-internal angle; manus compressed, little dilated; fingers stout, dentate, narrowly gaping to near the extremity; prehensile teeth strong. Ambulatory legs shorter than in allied species, especially the dactyli which have two rows of strong, graduated, horny spinules beneath; propodites with an obscure tubercle or tooth below near distal end. Fifth segment of male abdomen longer than sixth.

Color.—Yellowish with red dots (Tozzetti).

Measurements.—Male (21903), total length of carapace 94.5, width 83.2 mm.

Habitat.—In crevices of rocks in deep water (Bell).

Range.—Panama (?); Peru to Trinidad Channel, Patagonia.

Material examined.—

? Panama; J. M. Dow; 1 female (2402), from Boston Soc. Nat. Hist.

Callão, Peru; U. S. Exploring Expedition, J. D. Dana; 1 female (2365).

Cobija, Chile; specimen in Copenhagen Mus.

San Felix Island, Chile; about lat. 26° S., long. 80° W.; 1 male; photograph lent by C. E. Porter and returned to him.

Valparaiso, Chile; U. S. Exploring Expedition, J. D. Dana; 1 male, 1 female (2367).

Talcahuano, Chile; April, 1872; U. S. C. S. Str. *Hassler;* 10 male and female (2027, M. C. Z.).

Puerto Corral, Province of Valdivia, Chile; C. E. Porter; 1 very young; returned to sender.

Port Otway, Patagonia; February 9–10, 1888; *Albatross;* 3 males, 3 ovigerous females, encrusted with small Serpulids (21903).

West coast of South America; Dr. H. E. Ames, U. S. N.; 1 female (18138).

Locality not given; 1 large male (2410).

Genus PUGETTIA Dana

Pugettia Dana, Amer. Journ. Sci., ser. 2, vol. 11, 1851, pp. 268 and 433; type, *P. gracilis* Dana; U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, pp. 84 and 116; pt. 2, 1853, p. 1421.—Holmes, Occas. Papers California Acad. Sci., vol. 7, 1900, p. 24.—Stimpson, Smithson. Misc. Coll., vol. 49, 1907, p. 24.—Schmitt, Univ. California Publ. Zool., vol. 23, 1921, p. 205.
Epialtus of authors (part).

Carapace suboblong or ovate-oblong, tuberculate or uneven, with two prominent, angular, lateral projections, separated by a concave interspace. Supra-orbital eave well developed, advanced to form a preocular tooth; postorbital tooth commonly formed by the anterior angle of the hepatic expansion. Rostrum bifid. Antennae visible at sides of rostrum, basal article rather broad, next two articles flattened. Merus of maxillipeds broad, antero-external angle dilated, antero-internal angle notched for the insertion of the palpus. Chelipeds of male well developed, merus trigonal, palm dilated and compressed, fingers usually gaping at base. Ambulatory legs subcylindrical, the penultimate article not dilated and compressed. Abdomen composed of seven segments in both sexes.

Inhabits both sides of the North Pacific Ocean, also the East Indian Islands and Australia.

KEY TO THE AMERICAN SPECIES OF THE GENUS PUGETTIA

A^1. No small spine between the postocular tooth or lobe and the larger hepatic projection.
  B^1. Postorbital projection a triangular tooth.
    C^1. Hepatic expansion very wide (postorbital tooth and first antero-lateral tooth united by a leaflike expansion of the carapace).
      D^1. Carapace constricted behind the hepatic expansions___**gracilis**, p. 172.
      D^2. Carapace scarcely constricted behind the hepatic expansions, the outer (or posterior) margins of these expansions being subparallel. **producta**, p. 167.
    C^2. Hepatic expansion narrow, transverse (postorbital tooth and first antero-lateral tooth acute and distinct)_______________**richii**, p. 176.
  B^2. Postorbital projection an oval, obtuse lobe_________________**dalli**, p. 178.
A^2. A small spine between the postocular tooth or spine and the larger hepatic projection____**venetiae**, p. 180.

PUGETTIA PRODUCTA (Randall)

KELP CRAB

Plates 56 and 57

Epialtus productus Randall, Journ. Acad. Nat. Sci. Philadelphia, vol. 8, 1839 (1840), p. 110 (type-locality, Upper California; type not extant).—Gibbes, Proc. Amer. Assoc. Adv. Sci., 3rd meeting, 1850, p. 173.—Dana, U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 133; atlas, 1855, pl. 6, fig. 2*a* and *b*.—Stimpson, Proc. Acad. Nat. Sci. Philadelphia, vol. 9, 1857, p. 219; Boston Journ. Nat. Hist., vol. 6, 1857, p. 457 [17].—Lockington, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 77 [15].—R. Rathbun, Fisheries Industries of U. S., sec. 1, 1884, p. 778, pl. 268.—Newcombe,

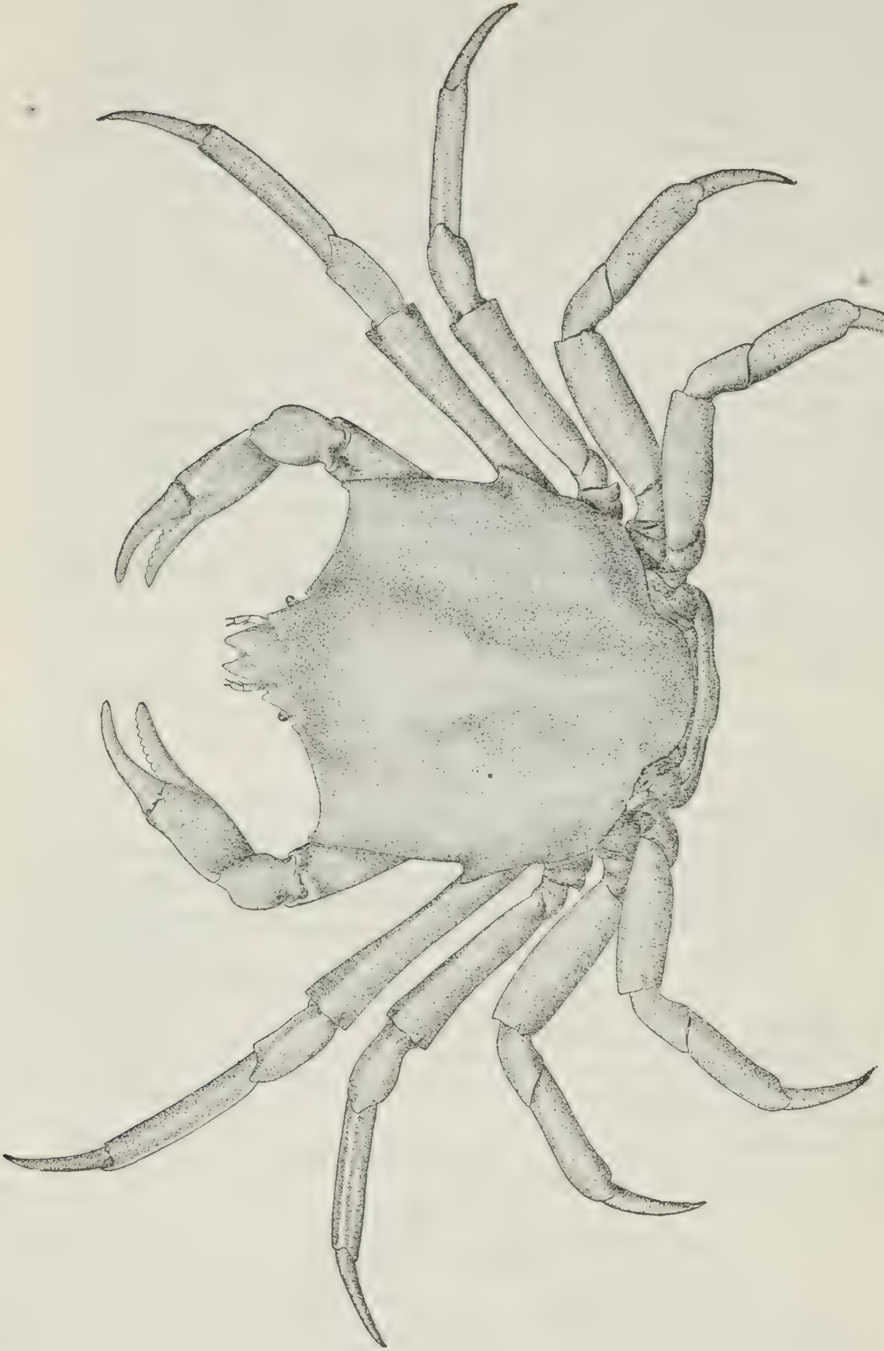

FIG. 62.—PUGETTIA PRODUCTA, FEMALE (2139), DORSAL VIEW, CARAPACE 86.8 MM. LONG. (AFTER R. RATHBUN)

Bull. Nat. Hist. Soc. Brit. Columbia, 1893, p. 22.—Ortmann, Zool. Jahrb., Syst., vol. 7, 1893, p. 42.—M. J. Rathbun, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 68 (except Alaskan locality).—Holmes, Occas. Papers California Acad. Sci., vol. 7, 1900, p. 22.—Weymouth, Stanford Univ. Publ., Univ. Ser., No. 4, 1910, p. 28, pl. 3, fig. 9.—Baker, Rep. Laguna Mar. Lab., vol. 1, 1912, p. 100.—Way, Puget Sd. Mar. Sta. Publ., vol. 1, 1917, p. 1, pl. 82, fig. 25.—Schmitt, Univ. Calif. Publ. Zool., vol. 23, 1921, p. 201, text-fig. 124.

Epialtus (*Taliepus*) *productus* A. Milne Edwards, Crust. Rég. Mex., 1878, p. 138.

Diagnosis.—Lateral margin of carapace with two teeth, the first very prominent and winglike. A preocular and postocular tooth. Fingers of male gaping. Propodites of ambulatory legs naked and unarmed.

Description.—Carapace smooth, sides in front of posterior lateral teeth nearly parallel; first tooth of antero-lateral margin large and prominent. Rostrum bifid, deeply notched, inner margin of horns slightly concave, outer convex. Preocular spine small, triangular; postocular also small. Antennae exceeding rostrum. Chelipeds stouter than ambulatory legs, and in old males longer; two tubercles above proximal end of merus, carpus and manus bluntly carinate; chela much enlarged in full-grown males, palm swollen, fingers widely gaping for half their length, a large tooth on dactyl in middle of gape, extremities of both fingers evenly toothed; in females and immature males, the fingers are dentate and meeting throughout their length or nearly so. Sixth segment of male abdomen longer than fifth, both segments much wider than long.

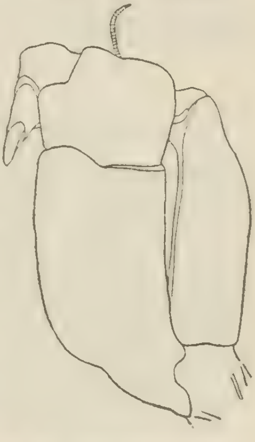

Fig. 63.—Pugettia producta (19315), maxilliped, × 2.75

Color.—Dark brown to tan (in young or recently moulted); under parts reddish, often bright brick red, sometimes with light markings on coxae of legs and on maxillipeds (Weymouth). Color reddish brown to olive brown, mottled with darker, small, round spots (Holmes).

Measurements.—Male (47970), total length of carapace 87.3, width 76 mm. Male (Weymouth), total length 107 (by error 170), width 93 mm.

Habitat.—In kelp beds, young common in tide pools, clinging to *Fucus* and other brown algae (Baker). Abundant in eel grass, on kelp, and on the piles under docks; common to at least 40 fathoms (Way).

Range.—From Vancouver Island, British Columbia, to Santa Rosalia Bay, Lower California.

Material examined.—

West coast North America; Dr. G. Suckley, N. Pacific R. R. Survey; 1 female (2139).

BRITISH COLUMBIA

Beaver Harbor, Queen Charlotte Sound; July 12, 1888; *Albatross;* 1 male (15519).

Union Bay; East of coal wharf; May 27, 1911; *Albatross;* 1 male, 1 female (50493).

Comox: 1893; *Albatross;* 1 male, 1 female (18307). Between tides; July, 1915; W. Spreadborough; 2 young females (Victoria Memor. Mus.).

Denman Island; *Albatross:* Shore; June 21, 1903; 4 males, 2 females (31545). North side; May 12, 1914; 2 males, 2 young (48834).

Gabriola Island, Taylor Bay; June 20, 1903; 1 female (31544).

Ucluelet; low tide; Geol. Survey of Canada; 2 males, 2 females (40057, 40058).

Barclay Sound; Sept. 27, 1888; *Albatross;* 1 female, soft shell (15521).

Victoria: Dr. C. F. Newcombe; 2 specimens (15796). Mr. Nichols; 1 male (46627).

WASHINGTON

Sucia Islands; May 6, 1894; *Albatross;* 1 male, 1 female (18981).

Straits of Fuca; 1880; D. S. Jordan; 1 male, 1 female (3064).

Marrowstone Point, near Port Townsend, Puget Sound; shore; June 29, 1903; *Albatross;* 2 females (31546).

Port Ludlow: W. H. Dall; 2 specimens (14796). *Albatross;* 6 specimens (19315).

Port Orchard: O. B. Johnson; 2 males, 5 females (14974). U. S. Fish Comm.; 2 specimens (15518).

Dockton; 1906; *Albatross:* May 10; 1 male (43826). May 11; 1 male (43827).

Oyster Bay (near New Kamilche); W. L. McAtee, U. S. Biol. Survey; 1 male (47970).

CALIFORNIA

Tomales Bay; E. Samuels; 1 specimen (14853).

Point Reyes; Mr. Campbell; 1 male (55344); from Bur. Fisheries.

Sausalito; *Albatross:* March 30, 1912; 1 young (55330). Near landing; Oct., 1912; 1 male (55336). May 4, 1913; 9 young (55328).

Point Bonita; *Albatross:* Between tide marks; June 3, 1912; 1 young (55334). From seaweed, below low water mark and between tide marks; Aug. 1, 1912; 4 specimens (52925).

San Francisco; 1880; D. S. Jordan; 1 young male, 2 young females (3095). California; probably San Francisco; J. D. Dana, U. S. Explor. Exped.; 1 male (2366).

Middle San Francisco Bay; Fort Point Light bears 288.5° (true), distant 0.32 mile; 3.5 to 2.25 fathoms; fne. clean gy. S., med. sized rounded St.; Apr. 17, 1912; station D 5778 *b*, *Albatross;* 1 male (55329).

Pillar Point, Half Moon Bay; June 30, 1903; C. F. Baker; 1 young (29313). May 11, 1913; *Albatross;* 6 specimens (55332, 55333).

Santa Cruz; J. S. Kingsley; 3 females (1 with Rhizocephalid parasite) (53045); from Boston Soc. Nat. Hist.

Monterey Bay; *Albatross;* 12 males, 11 females (15520). On *Macrocystis* and other kelps at shore-line; Harold Heath; 1 male (22872).

Monterey; A. S. Taylor; 1 male, 1 female, 2 young (2054). H. Hemphill; 4 females (2289), 2 young (3292). 1880; D. S. Jordan; 3 males, 3 females (3129).

Pacific Grove; John C. Brown; 5 specimens (23924). June, 1905; J. E. Benedict; 1 male, 2 females (46628). 1918; T. S. Oldroyd; 5 males, 2 females (1 ovigerous), 5 young (54019).

Santa Barbara; June, 1875; Mr. Shoemaker, Explor. W. of 100th Meridian; 1 male, 3 females (2316). 1880; D. S. Jordan; 1 male, 1 female (3048).

Venice, Santa Monica Bay; under aquarium; *Anton Dohrn;* 2 young (50009, 50288); from Venice Mar. Biol. Station.

Vicinity of Santa Monica and San Pedro Bays; *Anton Dohrn;* 4 males, 2 females, 4 young (49984–49986, 50008, 50287); from Venice Mar. Biol. Station.

San Pedro: 1880; D. S. Jordan; 1 male, 1 female (3088). Portuguese Bend; littoral; June 26, 1914; *Anton Dohrn;* 1 young (50286); from Venice Mar. Biol. Station. Foot of breakwater; Feb. 21, 1913; *Anton Dohrn;* 1 young female (50289); from Venice Mar. Biol. Station. Near foot of breakwater; Oct. 30, 1917; E. P. Chace; 1 young female (53991).

Laguna Beach; W. A. Hilton; 1 male, 1 female, 5 young (48910, 48993).

Santa Catalina Island: Catalina Harbor; beach; 1874; W. H. Dall; 1 male, 1 female (14793). Avalon Bay; Oct. 22, 1910; *Anton Dohrn* (P. S. Barnhart); 1 young (50285); from Venice Mar. Biol. Station.

San Clemente Island: August 23, 1894; Dr. E. A. Mearns; 1 female (18667). Jan., 1899; H. N. Lowe; 1 young male (23063). Thomas L. Casey; 1 female (46629).

La Jolla: March 6, 1898; *Albatross;* 2 young males (21764). In tide pools; Sept. 20, 1918; W. L. Schmitt; 1 young male (53979).

Point Loma; Jan. 28, 1889; *Albatross;* 1 female (15522).

San Diego: Rosa Smith; 1 female (7633). Rosa Smith Eigenmann; 1 male (14652). 1880; D. S. Jordan; 2 young (3560). H. Hemphill; 2 males, 3 females (18137).

California: Dr. T. B. Wilson; 1 small male (Mus. Phila. Acad.); "=*E. sayanus* White." E. Samuels; 1 male (53046); from Boston Soc. Nat. Hist.

LOWER CALIFORNIA, MEXICO

Rosalia Bay; August 22, 1896; A. W. Anthony; 1 young (19519).

PUGETTIA GRACILIS Dana

GRACEFUL KELP CRAB

Plate 58

Pugettia gracilis DANA, Amer. Journ. Sci., ser. 2, vol. 11, 1851, p. 268 (type-locality, Puget Sound; cotypes, Cat. No. 1237, M. C. Z.); U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, pl. 4, fig. *3a–c*.—STIMPSON, Boston Journ. Nat. Hist., vol. 6, 1857, p. 456.—LOCKINGTON, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 76 [14].—MIERS, Journ. Linn. Soc. London, vol. 14, 1879, p. 650; *Challenger* Rept., Zool., vol. 17, 1886, p. 40.—RATHBUN, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 69; Harriman Alaska Exped., vol. 10, 1904, p. 173.—HOLMES, Occas. Papers California Acad. Sci., vol. 7, 1900, p. 25.—LENZ, Zool. Jahrb., vol. 14, Syst., 1901, p. 452.—WEYMOUTH, Stanford Univ. Publ., Univ. Ser., No. 4, 1910, p. 29, pl. 4, fig. 10.—WAY, Puget Sd. Mar. Sta. Publ., vol. 1, 1917, p. 370, pl. 82, fig. 21.—SCHMITT, Univ. California Publ. Zool., vol. 23, 1921, p. 206, pl. 33, fig. 7, text-fig. 128.

Pugettia lordii SPENCE BATE, Proc. Zool. Soc. London, 1864, p. 662 (type-locality, Esquimalt Harbour, B. C.; type in Brit. Mus.); Lord's Nat. in Brit. Columbia, vol. 1, 1866, p. 265.

Pugettia quadridens, var. *gracilis* ORTMANN, Zool. Jahrb., vol. 7, Syst., 1893, p. 43.

Diagnosis.—Hepatic expansion very wide, the triangular postocular tooth and first antero-lateral tooth united by a leaflike expansion of the carapace. Merus of chelipeds with a prominent, irregularly dentate carina on the upper side; carpus cristate. Ambulatory legs with merus and propodus more or less carinate above. Ischium of maxillipeds with a longitudinal groove, exognath also grooved.

Description.—Carapace lyrate to broadly ovate, tuberculate; four median tubercles, of which two are gastric (the anterior one small), one cardiac and one intestinal; two large branchial tubercles, and one protogastric tubercle. A tuft of setae proceeds from each tubercle; from the protogastric pair two rows of curled setae run forward and inward; upper surface and margins of rostrum, as also the subbranchial regions setiferous. Lateral projections broad, the anterior one large and winglike, its antero-external angle advanced in a tooth, its posterior margin nearly longitudinal; the posterior projection is smaller, posterior end spiniform, anterior end lobiform. Postorbital tooth broad, separated from the broad supraocular eave by a narrow fissure. Outer margins of rostral horns subparallel, convex near tips; inner margins concave.

The basal article of the antennae bears a tooth at the antero-external angle; flagellum not reaching end of rostrum. A row of tubercles on pterygostomian region. Chelipeds large and strong. Merus triangulate, margins cristate; superior crest with three or more teeth; outer surface crossed by a blunt ridge. Carpus with two longitudinal crests; upper surface with an oblique ridge, outer surface uneven. Propodus very broad, compressed, and with a superior crest; inferior margin with a prominent posterior lobe. Fingers in adult males widely gaping; cutting edges dentate; a large tooth near base of dactylus. Ambulatory legs stout, obscurely tuberculate.

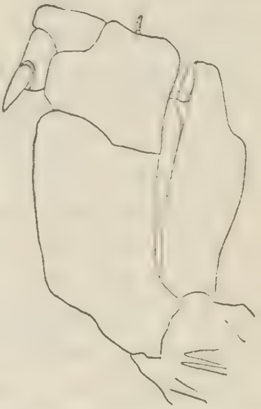

Fig. 64.—Pugettia gracilis (18140), maxilliped, × 4.44

Color.—Dorsal surface usually greenish brown, ventral side much lighter; but specimens found among red algae are a brilliant red (Way).

Measurements.—Male (5771), length of carapace to end of horn 53, width 39.2 mm.

Range.—From the western extremity of the Aleutian Islands eastward and southward to Mendocino, California. "To San Francisco" (Bate). "San Luis Obispo" (Lockington). Shore to about 40 fathoms. The more southern of the reported occurrences of the species in California need confirmation; intensive collecting in San Francisco and Monterey Bays has failed to reveal it.

Material examined.—

ALASKA

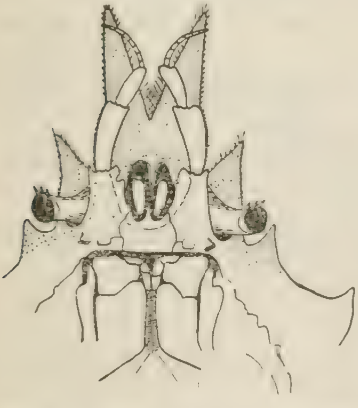

Fig. 65.—Pugettia gracilis, anterior portion, ventral view, × 1.8. (After Dana and Schmitt)

Chichagof Harbor, Attu Island, Aleutians; 5 to 7 fathoms; G. S.; 1873; W. H. Dall; 1 male, 1 female (14756).

Attu Island; shore; June 10–11, 1906; *Albatross;* 9 males, 2 females (46632).

Agattu Island; shore, among rocks; June 8, 1906; *Albatross;* 6 males, 5 females (1 ovigerous).

Kiska Harbor, Kiska Island; 1873; W. H. Dall; 9 to 12 fathoms; sdy. M.; 1 male (14797), covered with sponge. In Pass; 10 fathoms; 1 male (14759).

Petrel Bank, Bering Sea; Semisopochnoi Island, r. t. S. 45° W., l. t. S. 12° W., about 12 miles; lat. 52° 12′ N., long. 179° 52′ E.; 43–33 fathoms; fne. bk. G.; June 5, 1906; station 4778, *Albatross;* 2 females (1 young, 1 soft shell) (46532).

Adakh Island; July 2, 1893; *Albatross;* 50 specimens (18296).

Nazan Bay, Atka Island; low water; 1873; W. H. Dall; 1 male (14757).

Unalaska; S. Applegate; 5 males, 2 females (12050).

Dutch Harbor, Unalaska; W. R. Coe, Harriman Alaska Exped. (Yale Univ. Mus.). May 25–27, 1906; *Albatross;* 3 females (2 ovigerous) (46529).

Off Imagnee Pinnacle, Captains Bay, Unalaska; 8 to 20 fathoms; W. H. Dall; 1 specimen (12538).

Shores of Amaknak Island, Captains Bay, Unalaska; 1871; W. H. Dall; 1 male (13131).

Unalaska Bay, Unalaska; May 24, 1906; *Albatross;* 1 male (46528) from stomach of cod.

Bering Sea, off Akutan Island; lat. 54° 12′ 00″ N., long. 165° 42′ 00″ W.; 36 fathoms; G. bk. S.; August 31, 1893; station 3546, *Albatross*; 1 female (18298), encrusted with bryozoan.

Belkofski Bay, Alaska Peninsula; 15 to 25 fathoms; 1880; W. H. Dall; 2 males, 1 female (14754).

Popof Strait, Shumagins; 6 fathoms; 1872; W. H. Dall; 1 male, 4 females, 1 young (14753).

Chirikof Island; beach; W. H. Dall; 1 specimen (15375).

Kodiak Island: William J. Fisher; 7 males, 12 females (5747). U. S. Fish Commission: 2 specimens (15571). W. R. Coe, Harriman Alaska Exped. (Yale Univ. Mus.).

Woody Island, Kodiak Island ; low tide; September 21, 1920; G. D. Hanna; 1 ovigerous female (Cal. Acad. Sci.).

Afognak Bay, Afognak Island; Point Lipsett, S. 82° W., 1.5 miles; 19 to 14 fathoms; hrd. gy. S. R.; August 3, 1903; station 4269, *Albatross;* 2 males (31606).

West side of Middleton Island; 10 to 12 fathoms; G. St.; 1874; W. H. Dall; 2 males, 4 females, 15 young (14758).

Fox Island, Prince William Sound; T. Kincaid, Harriman Alaska Exped.; 4 males, 2 females (23844).

Virgin (or Gladbaugh) Bay, northeast coast of Prince William Sound; W. R. Coe, Harriman Alaska Exped. (Yale Univ. Mus.).

Orca; Harriman Alaska Exped.

Yakutat; Harriman Alaska Exped.

Port Mulgrave, Yakutat Bay; 6 to 40 fathoms; 1874; W. H. Dall; 2 young (14763).

Alert Bay, Cormorant Island; beach; February 22, 1882; Dr. W. H. Jones, U. S. N.; 1 female (5815).

Lituya Bay; 6 to 9 fathoms; 1874; W. H. Dall; 1 young (14764).

Dundas Bay, Icy Strait; Port Wimbleton, S. 20° W., 0.4 mile; 9 to 6.5 fathoms; crs. S. rky.; July 24, 1903; station 4263, *Albatross;* 1 male (31670).

Sitka: F. Bischoff; 3 specimens (2178). L. A. Beardslee; 1 male (3171). Depth, 10 fathoms; Harriman Alaska Exped.

Waterfall: in stomach of sculpin; January 9, 1923; Biological Survey, U. S. Department of Agriculture; 1 female; returned to sender.

Ward Cove, Revillagigedo Island; Dr. T. H. Streets, U. S. N.; 1 male, 1 female (14761).

Cedar Island, Loring; June 17, 1904; Chamberlain and Aller, Bur. Fisheries; 3 males, 3 females (1 ovigerous) (46633).

Tongass Village, Tongass Island, Alexander Archipelago; W. R. Coe, Harriman Alaska Exped. (Yale Univ. Mus.).

BRITISH COLUMBIA

Tledoo Village, near Susk, northwest coast of Graham Islands, Queen Charlotte group; August 18, 1883; James G. Swan; 2 males (6611).

Fort Rupert; between high and low tide lines, among rocks, seaweed and kelp; Harlan I. Smith; 3 males (22588).

Ucluelet; low tide to deep water; Geol. Survey of Canada; 1 male (40068).

Barclay Sound; September 27, 1888; *Albatross;* 5 males, 7 females (15570).

Otter Bay, Pender Islands; *Albatross;* 10 specimens (19314).

Denman Island; shore; June, 1903; *Albatross;* 2 males, 1 female (31607).

Victoria; Dr. C. F. Newcombe; 2 specimens (15795).

WASHINGTON

Straits of Fuca: 1 male (3400). 1880; D. S. Jordan; 19 males, 12 females (3077).

Neah Bay: J. G. Swan; 11 specimens (2396), 1 male (5771). May 12, 1914; Bureau of Fisheries; 1 male (48837).

Port Angeles; September 3, 1891; *Albatross;* 8 males, 7 females (18140).

Puget Sound: U. S. Exploring Expedition; 1 male, 1 immature female, cotypes (1237, M. C. Z.). D. S. Jordan; 2 specimens (3097). J. S. Kingsley; 1 male, 3 females (53056), received from Boston Soc. Nat. Hist.

Port Townsend; August 15, 1889; *Albatross,* 1 male, 3 females (16033), 1 female (18297).

Port Townsend Bay; July 1, 1903; *Albatross;* Kala Point, N. 41° W., 1.1 miles; 14 to 17 fathoms; sft. gn. M. br. Co.; temp. 50.8° F.; station 4214; 1 female (31604). Kala Point, N. 83° W., 0.5 mile; 17 fathoms; gn. M. fne. S. stky.; temp. 50.1° F.; station 4215; 1 male (31605).

Kilisut Harbor, near Port Townsend; July 1, 1903; *Albatross;* 1 male, 2 females (31603).

Port Ludlow; Sylvanus Bailey; 1 male, 1 female (14762). W. H. Dall; 5 specimens (14755).

Port Orchard; July, 1889; O. B. Johnson; 16 males, 7 females (14967).

CALIFORNIA

Mendocino; May, 1860; A. Agassiz; 2 males (999, M. C. Z.).

PUGETTIA RICHII Dana

Pugettia richii DANA, Amer. Journ. Sci., ser. 2, vol. 11, 1851, p. 268 (type-locality, California [29]; type not extant); U. S. Expl. Exped., vol. 13, Crust., part 1, 1852, p. 118, pl. 4, fig. 4*a–e*.—LOCKINGTON, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 76 [14].—NEWCOMBE, Bull. Nat. Hist. Soc. Brit. Columbia, 1893, p. 21.—RATHBUN, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 71.—HOLMES, Occas. Papers California Acad. Sci., vol. 7, 1900, p. 24.—WEYMOUTH, Stanford Univ. Publ., Univ. Ser. No. 4, 1910, p. 30, pl. 4, fig. 11.—SCHMITT, Univ. California Publ. Zool., vol. 23, 1921, p. 207, pl. 33, fig. 6, text-fig. 129.

Diagnosis.—Hepatic expansion narrow; transverse, the narrow postocular tooth and first antero-lateral tooth acute and deeply separated. Merus of chelipeds with a few tubercles on the upper side but no acute carina; the inner side may become strongly ridged in adult males, but is generally rounded in young males and in females; the carinae of the carpus are not prominent. Merus and propodus of legs not carinate. Ischium of maxillipeds plane or obscurely furrowed, exognath not grooved.

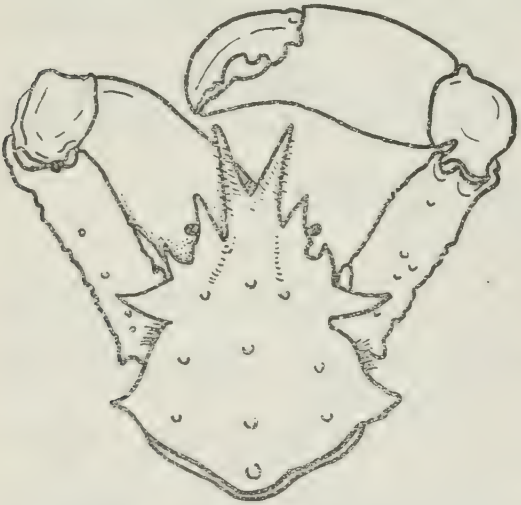

FIG. 66.—PUGETTIA RICHII, MALE, CARAPACE AND CHELIPEDS, × 0.8. (AFTER DANA AND SCHMITT)

Description.— Carapace ovate, tuberculate; number and position of tubercles as in *P. gracilis*, except that the 10 principal tubercles (4 gastric, 4 branchial, 1 cardiac and 1 intestinal) are nearer of a size; just outside the anterior of the branchial tubercles there is a small tubercle; also one above the posterior margin either side of the intestinal lobe, and one, more obscure, in the furrow between cardiac and branchial regions. Setae as in *P. gracilis*. Postocular tooth directed obliquely outward. It and the antero-lateral tooth are narrow. Postero-lateral spine or tubercle longer than in *P. gracilis*.

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[29] According to Stimpson, Boston Journ. Nat. Hist., vol. 6, 1857, p. 457, this species was collected by William Rich, Botanist of the U. S. Exploring Expedition, at San Diego, which is probably the type locality.

On the basal article of the antenna there is a tubercle on the outer margin near the posterior end. The merus and carpus of the chelipeds are bluntly ridged, the merus tuberculate above, especially at proximal end. Ambulatory legs more slender and cylindrical than in *P. gracilis*.

Color.—Red, varying from bright to dark, and often closely matching certain of the encrusting corallines (Weymouth).

Measurements.—Male (23921), length of carapace to end of horn 40.6, width 33 mm.

Range.—From Clayoquot Sound, Vancouver Island, British Columbia, to San Diego Bay, California. From between tides to 50 fathoms.

Material examined.—

BRITISH COLUMBIA

Ucluelet; low tide to deep water; Geol. Survey of Canada; 1 male (40067).

Barclay Sound; September 27, 1888; *Albatross:* 1 male, 2 females (15572).

Victoria; Dr. C. F. Newcombe (specimens returned to sender).

WASHINGTON

Dockton, Puget Sound; May 11, 1906; *Albatross:* 1 male (46527).

CALIFORNIA

Humboldt Bay; July 18, 1916; Scripps Inst.; 1 female, returned to sender.

Mendocino; May, 1860; A. Agassiz; 1 female, with *P. gracilis* (999, M. C. Z.).

Monterey Bay; *Albatross:* 1 male (15573). Under rocks and among algae about mean and low tide marks; 1898; Harold Heath; 1 male, 3 females (22873).

Monterey; Henry Hemphill; 1 male (2276), 1 young (21371). 1880; D. S. Jordan; 1 male, 2 females (3058).

Pacific Grove; July, 1895; J. O. Snyder; 1 male (19814). John C. Brown; 15 specimens (23921). 1918; T. S. Oldroyd; 5 males, 2 females (1 ovig.) (54008).

Venice, Santa Monica Bay; from Venice Mar. Biol. Sta.; February 2, 1911; *Anton Dohrn*, P. S. Barnhart; 2 males, 2 females (50172). Under Venice Aquarium; 1 male, 1 female (45582). Venice Breakwater; October 16, 1913; *Anton Dohrn*, P. S. Barnhart; 1 male (50175). Off Venice; August 2, 1913; *Anton Dohrn;* 2 males, 1 female (50173).

3.5 miles S. by W. of Venice; 24 fathoms; July 29, 1913; *Anton Dohrn;* 2 males, 1 female (50174). Two miles S. by E. from Point Del Rey, Santa Monica Bay; August 8, 1913; 3 males, 10 ovigerous females (50171).

San Pedro; E. P. Chace; December 15, 1918; 1 male (53984). San Pedro and vicinity; 1 male, 1 female (50960).

Long Beach, wharf; H. N. Lowe; 1 male (23050), "rare."

Laguna Beach; W. A. Hilton; 1 young female (48985), 1 male (50593).

Off Catalina Island; 50 fathoms; H. N. Lowe; 1 young female (29952).

La Jolla, in tide pools; September 21, 1918; W. L. Schmitt; 1 young (53977).

San Diego: Rosa Smith; 1 male (14765). Henry Hemphill; 1 male (49153).

San Diego Bay; 6.5 fathoms; M. S.; Apr. 1, 1896; *Albatross;* 1 female (20173).

PUGETTIA DALLI Rathbun

Plate 59, figs. 1–4

Pugettia dalli RATHBUN, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 232 (type-locality, "Southern California," really Catalina Harbor [30]; holotype, Cat. No. 17506, U. S. N. M.); Harriman Alaska Exped., vol. 10, 1904, p. 173, pl. 2, figs. 1 and 1*a*.—HOLMES, Occas. Papers California Acad. Sci., vol. 7, 1900, p. 26.—SCHMITT, Univ. California Publ. Zool., vol. 23, 1921, p. 208, pl. 23, fig. 5.

Diagnosis.—Postocular projection a flat oval lobe; hepatic projection a slender, transverse spine. Merus of chelipeds carinated on three margins; carpus tricarinate above. Ambulatory legs not carinate. Ischium of maxillipeds and also exognath grooved.

Description.—A small species. Carapace subtriangular; in its perfect state it is covered with short cutaneous vesicles which form prominences on the protogastric, mesogastric, cardiac, intestinal, hepatic, and branchial region (3 dorsal). The anterior part of the protogastric region, as well as the rostrum and the antero-lateral margin of the branchial region are covered with curled setae. When these coverings are removed, there is a large tubercle on the cardiac and intestinal regions and on each protogastric lobe; median gastric tubercles obsolescent; branchial regions not areolate. Lateral margin with two spines, the hepatic one slender, transverse or nearly so, and almost horizontal, the branchial spine stouter and upturned. Postocular tooth thin, obtuse, its upper surface flattened in a smooth oval plate inclined downward from the horizontal at an angle of about 45 degrees. Rostral horns more slender than in *P. richii*, widely divergent. Preocular tooth acuminate.

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[30] The jar from which the type specimens were taken contained mixed lots from Catalina Harbor and Monterey; as *P. dalli* has not yet been found north of the Santa Barbara Islands, it is reasonable to assume that Catalina Harbor is the type-locality.

Antennae exceeding rostrum; a large lobe on outer margin of basal article. Chelipeds strong; merus with a prominent thin and irregular carina on margins; carpus strongly carinate above and on inner margin, outer and upper surfaces irregularly ridged; hand large, compressed, margins thin; palm nearly as broad as long; fingers gaping, a tooth near base of dactyl, and one on pollex toward distal end of gape. Legs much more slender than in *P. richii* of equal size; first pair about as long as, or longer than, the chelipeds; three succeeding pairs short, decreasing regularly in length; margins fringed with club-shaped setae.

Females differ from adult males in having a broader and more ovate carapace, three distinct branchial areolations, when the pubescence is removed, and in the much more swollen gastric region.

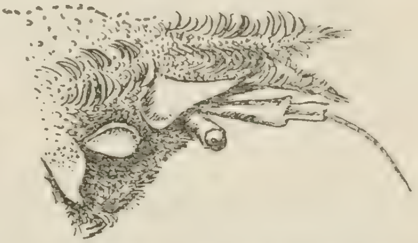

FIG. 67.—PUGETTIA DALLI, MALE (29951), ANTERIOR PORTION IN PROFILE TO SHOW FLAT SIDE OF POSTORBITAL LOBE, × 4

Color.—Specimens in formalin, from Laguna Beach, are largely dull red, with some white; legs more or less banded.

Measurements.—Male (29951), total length of carapace 17, width 13.4 mm.

Range.—From Santa Cruz Island, California (lat. 34° N.), to San Geronimo Island, west coast of Lower California, Mexico (about lat. 29° 40′ N.). Shore to 58 fathoms.

Material examined.—

CALIFORNIA

Off Santa Cruz Island; lat. 34° 00′ 00″ N.; long. 119° 29′ 30″ W.; 30 fathoms; P.; Feb. 6, 1889; station 2945, *Albatross:* 1 young female (17628).

Between Venice and Rocky Point, Santa Monica Bay; Aug. 11, 1914; *Anton Dohrn:* 1 male (50203), from Venice Mar. Biol. Sta.

Point Vincent; from rocks; Feb., 1918; H. N. Lowe; 1 male (53342).

Off Point Fermin, San Pedro; March 14, 1914; *Anton Dohrn:* 5 ovigerous females (50200), from Venice Mar. Biol. Sta.

San Pedro; H. N. Lowe; 1 male (32972).

Off Wilmington; lat. 33° 38′ 45″ N.; long. 118° 13′ 45″ W.; 20 fathoms; gy. S. brk. Sh.; Feb. 5, 1889; station 2942, *Albatross:* 1 large male (18190).

Laguna Beach; W. A. Hilton; 2 males, 5 females (4 ovigerous, 1 young) (48909, 50607–50609).

Santa Catalina Island: Dredged January, 1863; J. G. Cooper; 1 male (17372). Isthmus Harbor; Nov. 27, 1913; *Anton Dohrn;* 7 males, 4 females (3 ovigerous) (50201), from Venice Mar. Biol. Sta. Catalina Harbor; W. H. Dall; 4 males, 4 females (1 male is holotype) (17506). Avalon Bay; October 22, 1910; *Anton Dohrn,* P. S. Barnhart; 1 young (50202), from Venice Mar. Biol. Sta.

San Clemente Island; H. N. Lowe; 3 males, 2 females (29951).

La Jolla; 1915; Scripps Inst.; 1 ovigerous female (returned to sender).

San Diego: 10 fathoms; H. Hemphill; 1 male, 1 female (4283). C. R. Orcutt; 1 male (17371).

San Diego Bay; lat. 32° 41.5′ N.; long. 117° 13.5′ W.; shore; July 9, 1906; Scripps Inst.; 1 female (returned to sender).

San Diego Bay; *Albatross:* 12 fathoms; fne. S. R.; Mar. 22, 1894; station 3581; 1 male, 1 female (31484). 6.5 fathoms; M. S.; Apr. 1, 1896; station 3621; 1 female (20172).

Vicinity of San Diego; Point Loma Lighthouse, N. 43° E., 5.2 miles; 55–58 fathoms; fne. gy. S.; Mar. 12, 1904; station 4347, *Albatross;* 1 young female (46755).

MEXICO

San Geronimo Island, Lower California; 7 fathoms; July 19, 1896; A. W. Anthony; 1 young (19525).

PUGETTIA VENETIAE Rathbun

Plate 59, figs. 5–7

Pugettia venetiae RATHBUN, Proc. U. S. Nat. Mus., vol. 64, art. 14, 1924, p. 2 (type-locality, five miles off Newport Beach, California; from Venice Marine Biological Station, University of Southern California; 1 ovigerous female, holotype, Cat. No. 50268, U. S. N. M.).

Diagnosis.—Two hepatic spines, the larger one exceeding in size the lateral branchial spine. A distinct postocular spine. Wrist and margins of arm spinous.

Description.—Surface, except of fingers and distal portion of hand, covered with a short, dense pubescence, with occasional tufts of longer, club-shaped setae, which are most noticeable on the tubercles and other high portions of the carapace and in submarginal rows on ambulatory legs; long, straight hairs border the inner margins of the rostral horns, and curled hairs form an oblique row on each protogastric lobe. Carapace lumpy, each lump or boss furnished with one or more tubercles. The tubercles are as follows: Four gastric, of which two are median, two lateral, these a little behind the anterior median tubercle; one cardiac; three intestinal, arranged transversely; four or five branchial. Lateral spines three, one branchial and two hepatic; the branchial and the posterior of the hepatic spines are larger, curved, and with slender tips directed forward;

the minor hepatic spine is a little below the level of the major one, and is straight. Postorbital spine a little behind the eye, slender, similar to the two large lateral spines, but not so long-pointed. Preorbital spine also large, directed forward; in front of it, is visible the antennal spine. Rostrum deeply divided by a wide sinus; outer margins of horns subparallel. The basal antennal article has, besides the antero-external spine, one further back on the outer margin, while in the same line but behind the orbit there is another small spine. A small subhepatic spine; also a row on the subbranchial and on the pterygostomian region.

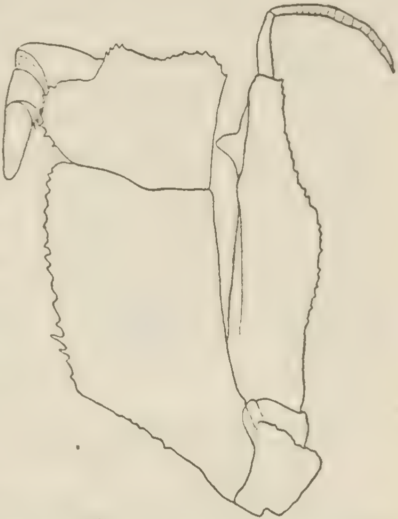

FIG. 68.—PUGETTIA VENETIAE, FEMALE (50268), MAXILLIPED, × 10.5

Chelipeds of adult male about as long as carapace. Ischium spined on inner margin; merus on inner, upper and inner-lower margins, 4 of the upper spines being the longest of all; the carpus has 2 spines on inner margin, a row of four on outer margin, and a few spines above and below; a few spinules on upper surface of palm at proximal end. Upper and lower margins of palm slightly convex; dactylus nearly as long as upper margin of palm; fingers narrow, deflexed, toothed within, a very narrow gape at base where the teeth are smaller.

Ambulatory legs subcylindrical, slender; propodites thickest at distal end; dactyls with two rows of sharp, prehensile spinules, and a long, light-horn-colored tip.

Measurements.—Female, holotype, median length of carapace 16.7, length of horns 4.4, width of carapace, spines excluded, 13.2 mm. Male (50268), median length of carapace 13.2, length of horns 2.7, width of carapace, spines excluded, 10.5 mm.

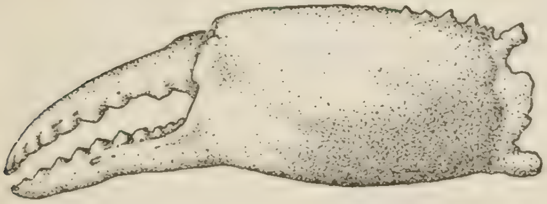

FIG. 69.—PUGETTIA VENETIAE, MALE (50268), LEFT CHELA, × 6

Range.—From Newport Beach, California, to Magdalena Bay, Lower California. 10 to 36 fathoms.

Material examined.—Five miles off Newport Beach, California; *Anton Dohrn;* from Venice Marine Biological Station; 1 ovigerous female, holotype, without chelipeds or legs; 1 male, paratype, with left cheliped and no legs (50268).

Off east end of Catalina Island, California; 30 fathoms; April 1, 1915; *Anton Dohrn;* from Venice Marine Biological Station; 1 male, 1 young female (50526).

Cortes Bank, Lower California, Mexico; lat. 32° 24.2′ N.; long. 119° 6.2′ W.; 19–29 meters (10–16 fathoms); rky.; July 18, 1908; station 1561, *Agassiz;* ovigerous female, holotype; received from Scripps Institution (53959).

Off Magdalena Bay, Lower California; lat. 24° 58′ 15″ N.; long. 115° 53′ 00″ W.; 36 fathoms; Coralline; temp. 64.3° F.; March 2, 1889; station 2989, *Albatross;* 1 young male, 1 young female (17380).

Remarks.—This is not a typical *Pugettia.* The supraocular eave is less expanded over the eye, and the narrow postocular spine is isolated both from the eave and from the hepatic prominences. The eye is larger than is usual in the Acanthonychinae. In the shape of the carapace behind the rostrum the species approaches *Antilibinia.*[31]

Genus MIMULUS Stimpson

Mimulus STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 199 [71]; type, *M. foliatus* Stimpson.

Carapace flattened, smooth or nearly so, subpentagonal; lateral portions laminate, much produced, winglike, antero-lateral margin cut by a narrow fissure into two closely approximate lobes. Rostrum short, bifid, horizontal. Basal antennal article enlarged at base and narrowing distally. Orbits incomplete below, but furnished above with a preocular and postocular spine. First pair of ambulatory legs much exceeding the others.

There is perhaps only one species, and that from the west coast of North America.

MIMULUS FOLIATUS Stimpson

Plate 60.

Mimulus foliatus STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 200 [72], pl. 3, fig. 1 (type-locality, off Monterey, California, taken from the stomachs of percoid fishes, "Cabesones"; cotype, Cat. No. 1244, M. C. Z.).—A. MILNE EDWARDS, Crust. Rég. Mex., 1875, pl. 18, figs. 4–4*d;* 1878, p. 145.—HOLMES, Occas. Papers California Acad. Sci., vol. 7, 1900, p. 23.—RATHBUN, Harriman Alaska Exped., vol. 10, 1904, p. 173.—WEYMOUTH, Stanford Univ. Publ., Univ. Ser. No. 4, 1910, p. 30, pl. 4, figs. 12 and 13.—SCHMITT, Univ. California Publ. in Zool., vol. 23, 1921, p. 204, text-fig. 127.

?*Mimulus acutifrons* A. MILNE EDWARDS, Ann. Soc. Entom. France, vol. 7, 1867, p. 264 (type-locality, unknown; type in Paris Mus.); Crust. Rég. Mex., 1878, p. 145.

Pugettia foliata RATHBUN, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 72.

Diagnosis.—Carapace broader than long or very slightly longer than broad. Lateral projections continuous. Postorbital tooth small.

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[31] M'Leay, in Smith, Illus. Zool. S. Africa, Annulosa, 1838, p. 56.

Description.—Carapace flattened and marked with several undulations; lateral expansions a little reflexed, margin behind incision nearly twice the length of that before; antero-lateral and postero-lateral angles wide, the latter somewhat produced; median region tumid, bearing two small, obsolescent, gastric tubercles, in front of which there may be two convergent rows of curved setae; another tubercle on each branchial region, a little above the middle of the postero-lateral margin. Intestinal region produced backward in a large smooth protuberance. Rostral horns short, flattened, with convex outer margins and spiniform, incurved tips; median notch narrowly triangular and setose; on upper side of rostrum there are two double rows of curved setae. Preocular tooth large, triangular, acute; postocular small and pointing obliquely downward, separated by a fissure from the preocular.

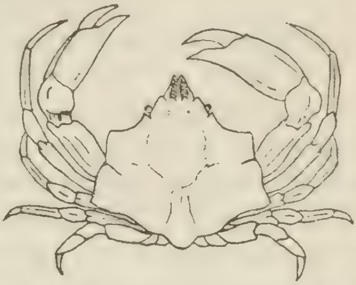


Fig. 70.—Mimulus foliatus, male cotype, carapace 28 mm. long, dorsal view. (After Stimpson)

Chelipeds of male large; inner margin of merus and carpus lamellate; hand oblong, fingers bent downward and curved inward, somewhat gaping near base, distally dentate, a large tooth on the dactylus in the gape. The propodites of the ambulatory legs have each a tuft of setae below.

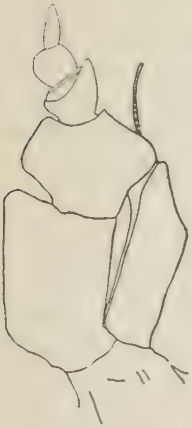


Fig. 71.—Mimulus foliatus (22874), maxilliped, × 5

Color.—A dull purplish, tan or red; legs banded. Variable. A male (22874) had a deep red carapace, with a narrower lighter border on the limb, and in the center a broad white V; hands red above, shading to white below; legs crossed by broad bands of red and white.

Measurements.—Female (23925), length of carapace to tip of rostral horns 29, width 32.4 mm. Male (22874), length 24.4, width 27.8 mm.

Range.—Unalaska to Monterey Bay, California; Mazatlan, Mexico (A. Milne Edwards). Low tide to 20 fathoms.

Material examined.—

Off Imagnee Pinnacle, Captains Bay, Unalaska, Alaska; 8 to 20 fathoms; 1880; W. H. Dall; 1 female (14894).

Ucluelet, British Columbia; low tide to deep water; Geol. Surv. of Canada; 1 male (40076).

Barclay Sound, British Columbia; *Albatross;* 1 male (15548).

Mendocino, California; A. Agassiz; 3 males, 3 females (1 ovigerous); identified by Stimpson (993, M. C. Z.).

Monterey, California: From stomach of fish; A. S. Taylor; 1 male, without chelipeds or legs, cotype (1244, M. C. Z.). H. Hemphill; 1 male (3291).

Monterey Bay, California: Low tide among and under rocks; 1898; Harold Heath; 4 males, 3 females, 3 young (22874).

Pacific Grove, California: John C. Brown; 2 males, 3 females (1 ovigerous). 1918; T. S. Oldroyd; 1 male, 1 ovigerous female (54010).

Genus LEUCIPPA Milne Edwards

Leucippa Milne Edwards, Ann. Soc. Entom. France, vol. 2, 1833, p. 512; type, *L. pentagona* Milne Edwards; Hist. Nat. Crust., vol. 1, 1834, p. 345.

Carapace subpentagonal or subtriangular, the length exceeding the width but little; lateral margins dentate or lobed. Rostrum horizontal, wide, lamellate, two-horned. A preorbital and a postorbital tooth present. Eyes small; peduncle very short. Basal article of outer antennae short; next two articles concealed under the rostrum. Epistome of moderate size; merus of outer maxillipeds much dilated outwardly, slightly truncate at the anterior inner angle, a small sharp tooth in front of insertion of palp. Legs short, compressed. Abdomen with seven segments free in both sexes.

Contains only one species, from South America and west coast of Mexico.

LEUCIPPA PENTAGONA Milne Edwards

Plate 61; plate 222, figs. 7–9

Leucippa pentagona Milne Edwards, Ann. Soc. Entom. France, vol. 2, 1833, p. 517, pl. 18B, figs. 1 and 2 (*pantagona*, on plate) (type-locality, Chile; type in Paris Mus.); Hist. Nat. Crust., vol. 1, 1834, p. 347, pl. 15, figs. 9 and 10.—Rathbun, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 572; vol. 38, 1910, pp. 571 and 613.—Doflein and Balss, Jahrb. Hamburg. Wiss. Anst., vol. 29, 1912, p. 36, text-fig. 4.

Leucippa ensenadae Milne Edwards and Lucas, d'Orbigny's Voy. l'Amér. Mérid., vol. 6, pt. 1, Crust., 1843, p. 9 (type-locality, "l'Ensenade de Ros," Patagonia; type in Paris Mus.); atlas, vol. 9, 1847, pl. 5, figs. 3–3*b*.

Leucippa laevis Dana, Amer. Journ. Sci., ser. 2, vol. 11, 1851, p. 273 (locality not given); U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 135 (type-locality, Rio de Janeiro; type not extant); atlas, 1855, pl. 6, fig. 5*a–c*.

Leucippa levis Smith, Trans. Connecticut Acad. Sci., vol. 2, 1869, p. 33.

Pugettia, species, Miers, Proc. Zool. Soc. London, 1881, pp. 63 and 66.

Pugettia australis Miers, Proc. Zool. Soc. London, 1881, p. 66 (type-locality, mouth of Rio de la Plata, 28 fathoms, lat. 36° 47′ S., long. 55°17′ W.; type in Brit. Mus.); *Challenger* Rept., Zool., vol. 17, 1886, p. 40 (sp.?).

Diagnosis.—A preorbital and a postorbital tooth. Rostrum flat, bifid. Chelipeds, legs and basal article of antennae cristate.

Description.—Covered with a vesicular pubescence, easily rubbed off, except on fingers and horny tips of ambulatories. Carapace subtriangular, smooth; median region sparingly tumid; rostrum elongate, furcate, horns triangular, usually acute, and with a narrow, triangular interval. A very small preorbital tooth. Antero-lateral margins of carapace very thin, a little reflexed, four-toothed or angulately undulate, the teeth unequal, the first tooth equivalent to the postorbital angle, the fourth tooth forming the postlateral angle of the carapace. Pterygostomian region usually two-toothed or spined. Basal article of antennae armed outside with a prominent crest, ending forward in a small tooth and followed behind by a spiny tubercle.

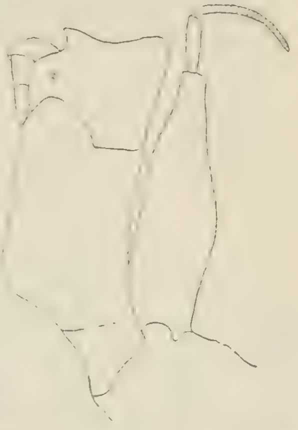


FIG. 72.—LEUCIPPA PENTAGONA (47119), MAXILLIPED, × 8.4

Chelipeds stout, cristate above; manus compressed; fingers curved down, edges crenulate, when closed, leaving a narrow gape in basal half or more. Legs cristate above except on dactylus; the latter finely denticulate below.

Color.—Pale gray (Milne Edwards). Tawny yellow (Milne Edwards and Lucas).

Measurements.—Largest male (2115, M. C. Z.), length of carapace to tip of horn 23, width 20.4 mm.

Variations.—Varies in width of carapace, prominence of lateral teeth, acuteness and divergence of rostral horns. Average individuals have the *ensenadae* form (Edwards and Lucas, fig. 3).

Range.—From Cape St. Roque, Brazil, to Patagonia, to Chile; Magdalena Bay, Lower California, Mexico. Depth, 7 to 52 fathoms.

Material examined.—See table, page 186.

Genus SPHENOCARCINUS A. Milne Edwards

Sphenocarcinus A. MILNE EDWARDS, Crust. Rég. Mex., 1875, explanation of pl. 17, fig. 5; 1878, p. 135; type, *S. corrosus* A. Milne Edwards.

Oxypleurodon MIERS, *Challenger* Rept., Zool., vol. 17, 1886, p. 38; type, *O. stimpsoni* Miers.

Carapace elongate-subpentagonal, broad behind, tapering in front to a rostrum which may be long and simple to near the tip or formed of two spines either contiguous or divergent. Surface of carapace usually symmetrically and deeply honeycombed by broad, deep channels which leave symmetrical tubercles often with overhanging edges between them. No true preocular and postocular spines, but the eye is deeply sunk between two low, smooth excrescences which are preocular and postocular in position. Basal antennal segment truncate-triangular; antennary flagella completely hidden beneath the rostrum. Epistome long and narrow. External maxillipeds with the merus as broad as the ischium, somewhat dilated at the antero-external angle, and usually slightly excavated at the antero-internal angle for the insertion of the small palp.

Chelipeds not much stouter but shorter than the next pair of legs which are the shortest of the ambulatories; the dactyli of the legs, *Material examined of Leucippa pentagona*

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude S.	Longitude W.									
	° ′ ″	° ′ ″			°*F*						
Brazil: Off Cape St. Roque	6 59 30	31 47 00	20	brk. Sh	79	Dec. 16, 1887	2758	*Albatross*	1 ♂	23346	
Uruguay: Rio de la Plata, below Montevideo.			7					U. S. C. S. S. *Hassler.*	10 ♂ ♀	2017, M.C.Z.	Identified by A. Milne Edwards.
Argentina: Buenos Aires									1 ♀	374, Mus. Paulista	
Off Rio de la Plata	36 42 00	56 23 00	11.5	S. brk. Sh		Jan. 12, 1888	2764	*Albatross*	17	21898	
Do	36 43 00	56 23 00	10.5	S. brk. Sh		do	2765	do	75	21899	
Do	36 47 00	56 23 00	68	S. brk. Sh		do	2766	do	18	21900	
Patagonia: San Antonio Bay						Mar. —, 1872		U. S. C. S. S. *Hassler.*	4 ♂ 2 ♀	2115, M.C.Z.	
Off Vermeja Head	41 17 00	63 00 00	17			Mar. 4, 1872	244P	do	1 ♀	2018, M.C.Z.	Identified by A. Milne Edwards.
Gulf of San Matias						Mar. —, 1872		do	2 ♂	2045, M.C.Z.	
Off Gulf of San Matias	40 03 00	58 56 00	52	fne. dk. S		Jan. 13, 1888	2767	*Albatross*	4	21901	
Eastern Patagonia								C. E. Porter	1 ♂	47119	
Mexico: Magdalena Bay, Lower California.	*Lat. N.* 24 38 00	112 17 30	51	gn. M		May 2, 1888	2833	*Albatross*	1 ♂	21902	

though stout, recurved and prehensile, are not toothed along the posterior edge. Abdomen in both sexes with seven distinct segments.

East and west coast of middle America. Indo-Pacific region from the western Indian Ocean to the Hawaiian Islands. Depth, 14 to 300 fathoms.

KEY TO THE AMERICAN SPECIES OF THE GENUS SPHENOCARCINUS

A^1. Dorsal surface deeply channeled. Antero-lateral margin entire. corrosus, p. 187.
A^2. Dorsal surface uneven but not deeply channeled. Antero-lateral margin coarsely dentate -- agassizi, p. 188.

Analogous species on opposite sides of the continent: *corrosus* (Atlantic); *agassizi* (Pacific).

SPHENOCARCINUS CORROSUS A. Milne Edwards

Plate 62; plate 223, figs. 3–5

Sphenocarcinus corrosus A. MILNE EDWARDS, Crust. Rég. Mex., 1875, pl. 17, figs. 5–5*c;* 1878, p. 136 (type-locality, off Barbados, 100 fathoms; holotype in Mus. Comp. Zoöl.).—RATHBUN, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 66.—FAXON, Mem. Mus. Comp. Zoöl., vol. 18, 1895, p. 8.—HAY, Bull. Bur. Fisheries, vol. 35, 1918, p. 460, pl. 39, fig. 1.—A. MILNE EDWARDS and BOUVIER, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 378, text-fig. 18.

Diagnosis.—Carapace deeply channeled between large, eroded tubercles. Antero-lateral margin entire. Rostrum longer than postrostral portion of carapace.

Description.—Antero-lateral margin of carapace concave, postero-lateral margin convex. Dorsal surface deeply channeled; the elevations thus formed are coarsely punctate or eroded, and form a regular pattern; one gastric elevation is longitudinally placed and widens behind; with a small, circular lobe on each side it resembles a clover leaf; cardiac lobe transversely elongate with a deep notch on each side of its posterior margin; an intestinal lobe follows the posterior margin; a lateral lobe (paired) extends from behind the lateral angle forward nearly to the eye; a small postocular and a larger supraocular elevation. Rostrum normally longer than carapace, composed in greater part of two cylindrical horns which are contiguous to near the tips, or occasionally divergent for a considerable distance. Two short rostrums have, in one case, horns wholly divergent; in the other, no sign of bifurcation, but a simple, acute tip.

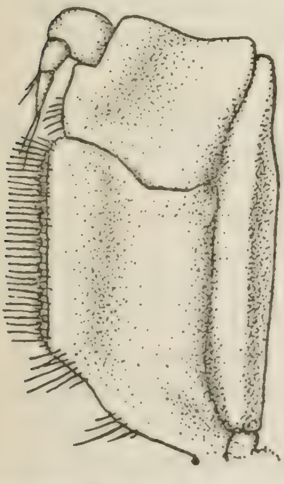


FIG. 73.—SPHENOCARCINUS CORROSUS, FEMALE (15183), MAXILLIPED, × 16

Chelipeds rather small and weak; the first pair of walking legs exceeds them by more than the length of its dactyli.

Color.—Orange red (Hay).

Measurements.—Ovigerous female (15183), extreme length of carapace, 22.7; length from posterior margin to line between anterior margins of supraocular elevations, 10.3; width of carapace, 10.8 mm.

Range.—Off Cape Lookout, North Carolina, to Barbados; 90 to 148 fathoms.

Material examined.—

Gulf Stream, 30 miles due S. of Cape Lookout Lightship, North Carolina; about 100 fathoms; *Fish Hawk;* 2 males, 2 females (51071), 1 male (50520).

Off Cape Fear, North Carolina; lat. 33° 20′ 00″ N.; long. 77° 05′ 00″ W.; 90 fathoms; gy. S.; temp. 65.8° F.; April 2, 1885; station 2418, *Albatross;* 1 female, ovigerous (15183).

SE. by E. ½ E. of Sand Key, Florida; 90 fathoms; J. B. Henderson; 1 young female (50519).

Off Barbados: Off Sandy Bay; 100 fathoms; December 29–30, 1871; *Hassler* Exped.; 1 female, holotype (2019, M. C. Z.). Lat. 13° 03′ 50″ N.; long. 59° 37′ 05″ W.; 94 fathoms; Co. brk. Sh.; temp. 61° F.; Mar. 5, 1879; station 276, U. S. C. S. S. *Blake;* 1 specimen (2886, M. C. Z.).

SPHENOCARCINUS AGASSIZI Rathbun

Plate 63; plate 223, figs. 1 and 2

Sphenocarcinus agassizi Rathbun, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 231 (type-locality, Gulf of California, 14 fathoms; holotype, Cat. No. 17343, U.S.N.M.).—Faxon, Mem. Mus. Comp. Zoöl., vol. 18, 1895, p. 7, pl. 1, figs. 3, 3*a*.

Diagnosis.—Carapace with surface uneven, not deeply channeled. Antero-lateral margin dentate. Rostrum shorter than postrostral portion of carapace.

Description.—Whole surface of body and limbs clothed with a short, close pubescence. Rostral horns long, horizontal, contiguous. A more or less broken, longitudinal, rounded ridge runs along the median line of the carapace from the base of the rostrum to the intestinal region, rising into a prominent tubercle on the gastric area. A transverse flattened tubercle on the cardiac region and two roundish ones on each branchial region. Antero-lateral margin of carapace armed with four prominent tubercles or large teeth, counting the one at the external orbital angle; these teeth increase in size successively from the first to the last. Upper margin of orbit thickened and produced into a blunt preocular tooth. Outer margin of pterygostomian region furnished with two or three rounded tubercles. On the merus of chelipeds two short spines at proximal end on superior border and one at distal extremity; otherwise the limbs are unarmed; fingers short, gaping slightly at base, cutting edges crenulate, tips blunt.

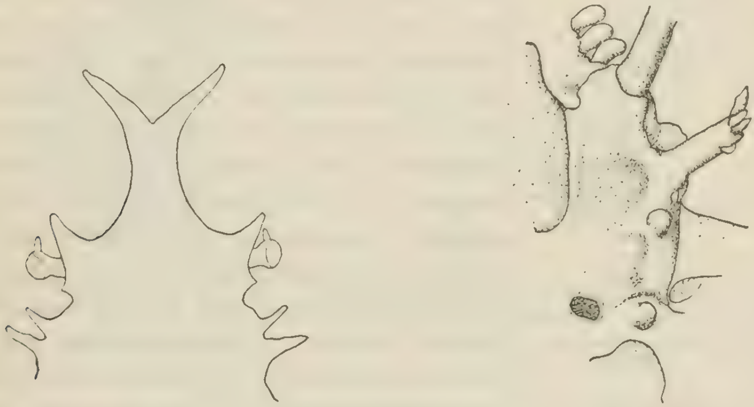
Measurements.—Male holotype, extreme length of carapace 35, length from posterior margin to line between anterior margins of preocular teeth 19.2, width of carapace 23 mm. Male (M. C. Z.), length of carapace including rostrum 39, of rostrum 16, width of carapace 28 mm. (Faxon).

Range.—Gulf of California to Panama, 14 to 71 fathoms.

Material examined.—

Gulf of California; off Cape Tepoca, Mexico; lat. 30° 28′ 00″ N.; long. 113° 06′ 30″ W.; 14 fathoms; bk. S. brk. Sh.; temp. 66° F.; Mar. 24, 1889; station 3019, *Albatross;* 1 male, holotype (17343).

Gulf of California; northwest of Guaymas, Mexico; lat. 28° 07′ 00″ N.; long. 111° 39′ 45″ W.; 71 fathoms; fne. gy. S. brk. Sh.; temp. 57.9° F.; Mar. 23, 1889; station 3011, *Albatross;* 2 males, 1 female (17342).



FIGS. 74-75.—MENAETHIOPS PORTORICENSIS. 74 (LEFT), FEMALE, HOLOTYPE, ANTERIOR HALF OF CARAPACE, × 14.5; 75 (RIGHT), FEMALE (56912), BASAL ARTICLE OF LEFT ANTENNA, MUCH ENLARGED

Genus MENAETHIOPS Alcock

Menaethiops ALCOCK, Journ. Asiat. Soc. Bengal, vol. 64, 1895, p. 289; type, *M. bicornis* Alcock.

Carapace subpyriform or oblong, pubescent; rostrum divided into two slender spines. The eyes, which are movable forwards but not retractile, are in great part concealed beneath a large, very conspicuous, laminar, supraocular eave, terminating anteriorly in a spine. No postorbital spine. Basal article of antenna broad; mobile portions of antennae visible from above, either side of rostrum. Merus of outer maxillipeds as broad as ischium, and palp inserted at antero-internal angle of merus. Chelipeds of male enlarged. The ambulatory legs, of which the first is longer than the rest, have strongly recurved dactyli. Abdomen of seven separate segments in both sexes.

Off Porto Rico; Zanzibar; Karachi, India.

MENAETHIOPS PORTORICENSIS Rathbun

Plate 49, figs. 1 and 2

Menaethiops portoricensis RATHBUN, Proc. U. S. Nat. Mus., vol. 64, art. 14, 1924, p. 2 (type-locality, Porto Rico; 1½ miles S. of Caña Gorda Islands, near Guanica Harbor; 26 fathoms; female, holotype, F 2628, Amer. Mus. Nat. Hist.).

Diagnosis.—Rostrum nearly half as long as remainder of carapace, its spines widely divergent. Two marginal, hepatic spines.

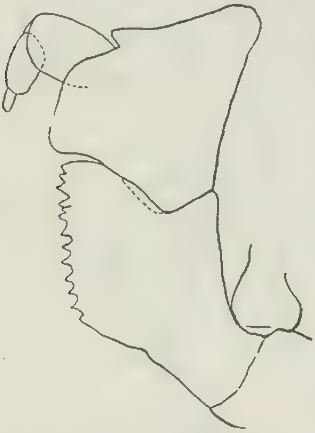


FIG. 76.—MENAETHIOPS PORTORICENSIS, MALE (56012), ENDOPODITE OF MAXILLIPED, × 43.8

Description.—Surface of carapace and appendages in large part covered with broad, flattened vesicles the largest of which are spatuliform. These are so varied in size, shape, and disposition that at first sight they appear like foreign bodies. Carapace constricted behind orbit and behind hepatic regions. Gastric, cardiac, and intestinal regions tumid, and tuberculate or granulate; four tubercles form a transverse diamond on the gastric region. Rostrum slender, divided in its middle into two widely divergent, slightly curved and tapering horns; basal half of rostrum with a median furrow. Preocular spine suberect, prominent; nearer the median line may be seen a smaller spine of the basal antennal article. On the lateral margin of the hepatic region there are two slender spines; on the branchial region near its anterior end and a little above the margin there is a small, acute spine, while near the lateral angle of the carapace is the largest spine of all. The ornamentation of the carapace is considerably obscured by the vesicular pubescence. Besides a long, slender, cylindrical spine at the antero-external angle of the basal antennal article, there is a tubercle on its outer margin. Two pterygostomian tubercles.

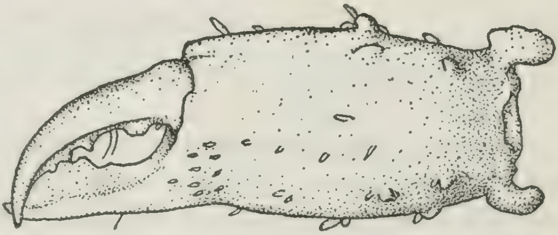


FIG. 77.—MENAETHIOPS PORTORICENSIS, MALE (56012), CHELA, MUCH ENLARGED

Chelipeds of male stout; fingers widely gaping in their basal half, the fingers being arched away from each other; prehensile edges broad and thin; a large tooth near base of dactyl. Legs highly ornamented (fig. 78); dactyls armed with a few (4 to 6) sharp spinules, which become longer towards the horny tip of the dactyl.

Measurements.—Female, holotype, total length of carapace 5.4, length of rostrum 1.6, width of carapace with spines 3.6, without spines 2.7 mm. Both males lack the rostral horns.

Range.—Porto Rico (southwest coast); 11 to 26 fathoms.

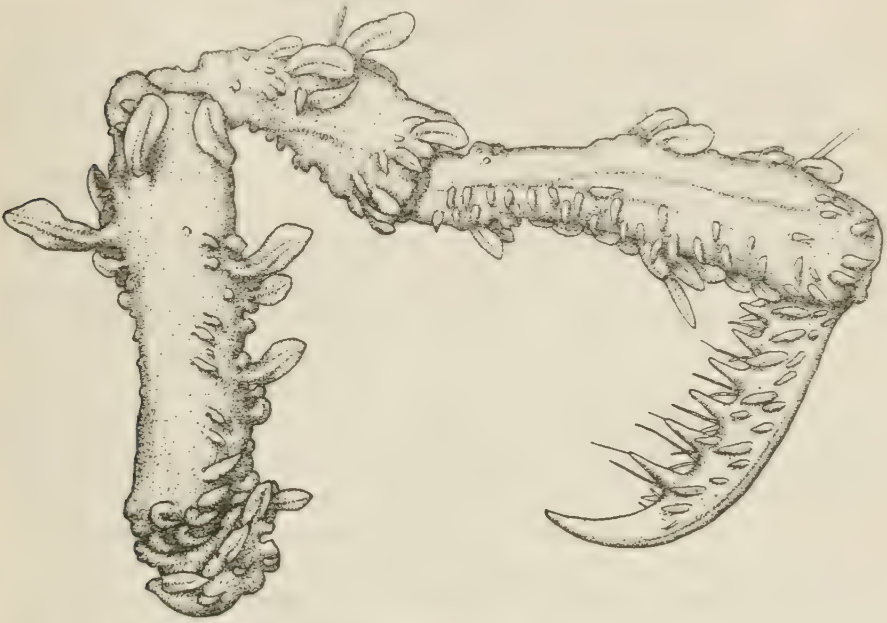


FIG. 78.—MENAETHIOPS PORTORICENSIS, FEMALE (56012), A LOOSE LEG, MUCH ENLARGED

Material examined.—

Southwest of Salinas Cove; 11 fathoms; July 10, 1915; 1 male (F 2384, Amer. Mus. Nat. Hist.); 1 male, 1 ovigerous female (56012).

One and a half miles south of Caña Gorda Islands, near Guanica Harbor; 26 fathoms; scattered coral rock and sand with algae; June 23, 1915; 1 ovigerous female, holotype (F 2628, Amer. Mus. Nat. Hist.).

Genus ESOPUS A. Milne Edwards

Esopus A. MILNE EDWARDS, Crust. Rég. Mex., 1875, p. 89; type, *E. crassus* A. Milne Edwards.—A. MILNE EDWARDS and BOUVIER, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 389.

Body and feet almost entirely smooth. Carapace thick, gibbous, and as if inflated. Front formed by a large, rounded, tuberculiform prominence. Basal segment of antenna very large, swollen, extending well beyond eyes. Antennular fossettes very narrow. Orbits incomplete below, postocular process present but separated by a rather wide fissure above. Ocular peduncles stout, and capable of folding into a cavity hollowed for the purpose. Buccal cavity wide in front. Merus of outer maxillipeds a little dilated outward and forward, and not notched on inner side for insertion of palpus.

Ambulatory legs very slender, rather long, dactyli very delicate. (A. Milne Edwards.)

Abdomen of adult female wide, swollen, and formed of four (not three) articles, the fourth to seventh segments, inclusive, being coalesced.

Contains only one species.

ESOPUS CRASSUS A. Milne Edwards

Plate 222, figs. 10–12

Esopus crassus A. Milne Edwards, Crust. Rég. Mex., 1875, p. 90, pl. 17, figs. 1–1*c* (type-locality, off Barbados, 100 fathoms; holotype, Cat. No. 1944, M. C. Z.).

Diagnosis.—Carapace oval, lobulate, finely granulate. Ambulatory legs smooth and slender.

Description.—Carapace narrow, oval, and slightly narrowed in front; entirely covered, excepting in the interlobular depressions, with shining and almost confluent granules. Anterior part very swollen. Interorbital space divided into three nearly equal lobes by two longitudinal depressions which are connected behind with the cervical suture. Protogastric lobes clearly marked on their outer side; on the inner side they are confluent with the mesogastric lobe which is elevated in a point above them; metagastric lobes confluent on the median line and separated by a deep suture from the urogastric lobes which are themselves confluent. Anterior cardiac lobe conical, prominent, and surmounted by a large tubercle; posterior cardiac, or intestinal, lobe much more depressed, and divided into two portions by a transverse suture. Hepatic region small and rounded. The branchial region bears on its middle portion a tubercle smaller than that of the cardiac lobe; borders of metabranchial lobe cut above the base of the legs into three blunt points. Pterygostomian regions papillated and granulated. Basal article of antennae covered with granulations similar to those of the front. Some large granules on front of epistome. Abdomen also granulate. Chelipeds of female cylindrical and very slender. Ambulatory legs smooth; first three pairs nearly the same length; fifth a little shorter. (A. Milne Edwards.)

The median lobule of the front or interorbital space is divided transversely in two, forming a short, buttonlike, rostral projection. The anterior point of the mesogastric region is a smooth, white, oval elevation.

Measurements.—Female, holotype, length of carapace 13, width 8.4 mm.

Range.—Known only from the unique type.

Material examined.—Off Sandy Bay, Barbados; 100 fathoms; December 29–30, 1871; *Hassler* Expedition; 1 female, holotype (1944, M. C. Z.).

Subfamily PISINAE

Pisinae ALCOCK, Journ. Asiat. Soc. Bengal, vol. 64, 1895, p. 165.
Blastidae STEBBING, Marine Invest. S. Africa, vol. 4, Cape Town, 1905, p. 25.

Eyes with commencing orbits, of which one of the most characteristic parts is a large, blunt, usually but not always isolated, cupped postocular process into which the eye is retractile, but never to such an extent as to completely conceal the cornea from dorsal—still less from ventral—view; there is almost always a distinct supraocular eave, which is often produced forwards as a spine; the eyestalks are short. The basal antennal article is usually rather broad, at any rate at the base; its antero-external angle is generally produced forwards as a spine or tooth. The merus of the external maxillipeds, owing to the expansion of its antero-external angle, is broader than the ischium and carries the palp at its antero-internal angle. Rostrum usually two-spined or two-toothed. Legs often very long. (After Alcock.)

KEY TO THE AMERICAN GENERA OF THE SUBFAMILY PISINAE

A¹. Supraocular eave not in close contact with the postocular spine or process.
  B¹. No tooth on orbital margin between supraocular eave and postocular cup.
    C¹. Supraocular eave produced anteriorly in a spine. (In the genus *Rochinia*, this is true of American species.)
      D¹. Rostrum bifid for more than half its length.
        E¹. Rostrum thin, broad, flat and horizontal. Movable articles of antennal peduncle laterally carinate; palms carinate above. Carapace lumpy------------------------------- **Scyra**, p. 195.
        E². Rostrum armed with two long slender spines, or thick and deflexed.
          F¹. Rostrum thick and deflexed. Supraocular eave widespreading, separated from the postocular tooth by a broad V-shaped sinus. Large, hairy crabs-------------------- **Loxorhynchus**, p. 198.
          F². Rostral spines slender.
            G¹. Ambulatory legs bordered with two rows of spines. **Oplopisa**, p. 228.
            G². Ambulatory legs not bordered with two rows of spines.
              H¹. An orbital spine between postocular spine and basal antennal article; orbit very open above; supraocular eave narrow, its spine small. Chelae of male swollen. **Trachymaia**, p. 229.
              H². No orbital spine between postocular spine and basal antennal article; supraocular eave advanced in a substantial spine.
                J¹. Chelipeds of male much enlarged; palm broad, upper edge thin. Superior orbital sinus V-shaped-- **Chorilia**, p. 202.
                J². Chelipeds slender, often greatly elongated in male. Orbital sinuses U-shaped and more open than in *Chorilia*. **Rochinia**, p. 204.
      D². Rostrum bifid at tip only, or at least not behind the middle. Carapace broadly subtriangular. Preocular spine well developed.
        E¹. Not more than two long, antero-lateral marginal spines. Inferior orbital sinus rounded---------------------- **Libidoclaea**, p. 223.

E². Three long, antero-lateral marginal spines besides the orbital spine. Inferior orbital sinus acute. (True of the typical or American species) ---------------------------------- **Chorilibinia**, p. 309.

C². Supraocular eave not produced anteriorly in a spine.

D¹. Carapace either broader than long or very little longer than broad. Rostrum short. Chelipeds much shorter than ambulatory legs.

E¹. Rostrum very small, simple. Basal antennal article reaching to line of rostrum ---------------------------- **Leurocyclus**, p. 230.

E². Rostrum longer than in *Leurocyclus*, bilobed. Basal antennal article not reaching to line of rostrum ------ **Chionoecetes**, p. 232.

D². Carapace considerably longer than broad. Rostrum elongate.

E¹. Carapace smooth.

F¹. Basal article of antennae narrow; peduncle not reaching end of rostrum -- **Pelia**, p. 275.

F². Basal article of antennae broad, nearly as broad as long; peduncle reaching or overreaching end of rostrum ------ **Pisoides**, p. 284.

E². Carapace rough with tubercles or tubercles and spines. Carapace lyrate; rostrum triangular, horns contiguous or nearly so.
Hyas, p. 252.

B². A tooth on orbital margin between supraocular eave and postocular cup.

C¹. Rostrum small. Carapace suborbicular or broadly ovate.

D¹. Ambulatory legs with very long propodites and very short dactyls. Ischium of outer maxillipeds much longer than merus.
Herbstia, p. 293.

D². Ambulatory legs with dactyls nearly as long as propodites. Ischium of outer maxillipeds scarcely longer than merus (both measured on outer margin) ----------------------------- **Micropisa**, p. 303.

C². Rostrum of considerable length. Carapace narrower than in C¹, distinctly longer than broad.

D¹. Chelipeds filiform, chelae more slender than merus. Legs much stouter, spinous --------------------------------- **Lepteces**, p. 292.

D². Chelipeds as stout as, or stouter than, ambulatory legs.

E¹. First ambulatory leg long, much longer than the last three.

F¹. Orbit very open; postorbital tooth small. Carapace oval, mostly smooth. Antennae concealed by rostrum ---- **Chorinus**, p. 304.

F². Orbit not very open; postorbital tooth of good size. Carapace pyriform, with four spines forming a square on widest portion. Antennae visible at sides of rostrum -------- **Notolopas**, p. 287.

E². Ambulatory legs diminishing regularly from first to fourth pair. Carapace rough with numerous spines.

F¹. Orbit closed below; postorbital tooth broad. Spines of carapace short and stout ------------------------------- **Nibilia**, p. 289.

F². Orbit very open above and below; postorbital projection a slender spine. Spines of carapace long and slender -- **Holoplites**, p. 307.

A². Supraocular eave in close contact with the postocular process. (In young *Libinia* there may be a narrow open slit in superior orbital margin.)

B¹. Carapace usually subglobose behind the rostrum, spinous; rostrum involute --- **Libinia**, p. 310.

B². Carapace subtriangular, lumpy; rostrum more or less revolute. Orbit outward-looking. Basal antennal article tapering, not spined.
Lissa, p. 331.

Species of Pisinae wrongly ascribed to America:

Cancer hircus Fabricius, Species Insectorum, vol. 1, 1781, p. 503; Jamaica. =*Pisa tetraodon* (Pennant, 1777), a European species. Type examined (Kiel Mus.).

Genus SCYRA Dana

Scyra Dana, Amer. Journ. Sci., ser. 2, vol. 11, 1851, p. 269; type, *S. acutifrons* Dana; U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 94.—Holmes, Occas. Papers California Acad. Sci., vol. 7, 1900, p. 41.

Carapace subpyriform, tuberculated, having a few or no spines. Rostrum composed chiefly of two flattened horns. Orbits small, with a fissure above and below, the lower and sometimes the upper one being open. Preorbital spine present. Basal antennal article rather narrow, with a small spine at antero-external angle, the two following articles compressed and not concealed by rostrum. Merus of maxillipeds distally truncate, notched at antero-internal angle. Chelipeds of male well developed, hand compressed and carinated above, fingers acute. Legs moderately long and narrow, diminishing rather regularly in length from first to fourth. Abdomen 7-segmented in both sexes. (After Holmes.)

Inhabits the west coast of North America and the coast of Japan.

SCYRA ACUTIFRONS Dana

SHARP-NOSED CRAB

Plate 79; plate 224, figs. 4 and 5

Scyra acutifrons Dana, Amer. Journ. Sci., ser. 2, vol. 11, 1851, p. 269 (type-locality, *in mari Oregonensi;* type not extant); U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 95, pl. 2, figs. 2*a*–2*d*.—Holmes, Occas. Papers California Acad. Sci., vol. 7, 1900, p. 41.

Diagnosis.—Carapace of adult without a spine on hepatic or branchial margin. Margins of arm tuberculate, not cristate; dactylus of chela with a large, subbasal tooth. Ambulatory legs subcylindrical, dactyli rather stout.

Description.—Carapace covered with tubercles; gastric region tumid, separated from cardiac and branchial regions by a conspicuous depression; an acute or spiniform tubercle near the center of the gastric region, behind which there is a larger, obtuse tubercle.. Branchial regions tumid, bearing at the widest part a large, projecting tubercle, in front of which lies an elevation which may bear several small tubercles though often smooth. A very large tubercle on the cardiac and a small one on the intestinal region. Rostrum short, horns ovate-lanceolate, occupying over half the length. Preorbital spine small, acute. A lobe on outer margin of basal antennal article and immediately behind it, a tooth in line with the very prominent antero-lateral border of the buccal cavity. Pterygostomian region carinate, carina roughly crenate.

Chelipeds of male large; merus semicylindrical (flattened below) and strongly pustulate, especially at the angles; carpus pustulate, several ridges on upper-outer surface; manus long, high, compressed, the palm below the wide carina often inflated; fingers deflexed, and in old males, gaping at base, with a large tooth near base of dactyl. Legs subcylindrical, more or less pubescent; propodi sulcate on either side; dactyli considerably shorter than propodi and furnished with sharp, corneous tips.

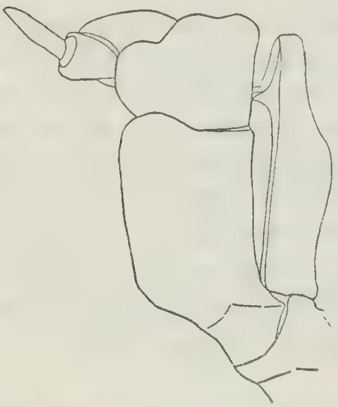


Fig. 79.—Scyra acutifrons (31548), maxilliped, × 6.2

Variations.—In the female the regions of the carapace are much less elevated, the gastric region more evenly rounded. Occasional small ones (1 male, 3 females, in the collection) 13 or 14 mm. long, have a slender, sharp spine on the hepatic margin, a character not found in other young or adults. One of the females is ovigerous.

Measurements.—Male (14966), length of carapace to tip of horns 52.6, width 37.7 mm.

Range.—Kodiak, Alaska, to San Diego, California, low tide to 45 fathoms.

Material examined.—

ALASKA

Kodiak; W. G. W. Harford; 1 female (14801).

BRITISH COLUMBIA (VANCOUVER ISLAND)

Ucluelet; low tide to deep water; from Geol. Surv. of Canada; 1 male (40064).

Off Cape Beale; Sept. 26, 1888; *Albatross:* Lat. 49° 00′ 00″ N.; long. 125° 48′ 00″ W.; 24 fathoms; gy. S.; temp. 52.3° F.; station 2881; 1 female (16344). Lat. 48° 53′ 00″ N.; long 125° 53′ 00′ W.; 34 fathoms; R.; temp. 50.3° F.; station 2879; 1 male (16343).

Victoria; C. F. Newcombe; 1 male (15793).

WASHINGTON

Off Cape Flattery; lat. 48° 30′ 00″ N.; long. 124° 57′ 00″ W.; September 24, 1888; *Albatross:* 40 fathoms; R.; temp. 47.8° F.; station 2873; 1 female (18986). 27 fathoms; R. Sh.; temp. 50.3° F.; station 2874; 2 males (16020). 40 fathoms; R. Sh.; temp. 47.8° F.; station 2875; 1 female (18987).

Near Port Townsend, Admiralty Inlet; Admiralty Head Light, N. 38° W., 1.3 miles; 26 to 15 fathoms; R. Sh.; temp. 50.8° F.;

June 29, 1903; station 4205, *Albatross;* 4 males, 5 females (31548), 1 male (46631).

Admiralty Inlet; 1903; *Albatross;* 7 males, 5 females (31547).

Port Orchard, Puget Sound; July, 1889; O. B. Johnson; 8 males, 3 females (14966).

Dockton, Puget Sound; May 10–11, 1906; *Albatross;* 1 male, 2 ovigerous females (46630); 2 are encrusted with sponges and barnacles.

Puget Sound; 1880; D. S. Jordan; 1 female (3099).

CALIFORNIA

Humboldt Bay; July 18, 1916; 1 male (Scripps Inst.).

Off Farallon Islands; 20 fathoms; October 3, 1901; Bur. Fisheries; 1 male (33469).

Off Santa Cruz; lat. 36° 55′ 10″ N.; long. 122° 04′ 00″ W.; 21 fathoms; rky.; temp. 52.3° F.; Mar. 13, 1890; station 3124, *Albatross;* 1 ovigerous female (15513).

Monterey; Doctor Canfield; 2 males, 1 female (3449). D. S. Jordan; 1 male (16291). H. N. Lowe; 1 male, 2 females (53341).

Monterey Bay; at extreme low tide mark usually, under rocks or in crevices; Harold Heath; 3 males, 1 female (22876).

Pacific Grove; July, 1895; J. O. Snyder; 1 male, 3 females (19815). John C. Brown; 5 specimens (23923).

Off Santa Barbara; February 11, 1889; *Albatross:* Lat. 34° 22′ 45″ N.; long. 119° 40′ 30″ W.; 21 fathoms; gn. M.; station 2961; 1 male (16341). Lat. 34° 20′ 40″ N.; long. 119° 37′ 45″ W.; 26 fathoms; gy. S. P. St.; temp. 58° F.; station 2969; 1 male (16342).

Off Santa Rosa Island; 38 to 45 fathoms; April 15, 1904; station 4431, *Albatross;* 1 young male (46756).

Off Venice, Santa Monica Bay; August 13–14; *Anton Dohrn:* from Venice Mar. Biol. Sta.; 1 immature female (50206).

Three miles south of Venice; 14 fathoms; July 29, 1913; *Anton Dohrn:* from Venice Mar. Biol. Sta.; 1 ovigerous female (50205).

Off Point Fermin, San Pedro; March 14, 1914; *Anton Dohrn:* from Venice Mar. Biol. Sta.; 1 ovigerous female (50204), variety with hepatic spine.

Laguna Beach; W. A. Hilton; 1 young male (48986).

San Diego Bay; Ballast Point Lighthouse, W. SW. ½ W., 300 yards; 12 fathoms; fne. S. R.; March 22, 1894; station 3581, *Albatross;* 1 male, 1 female (20149).

SOUTHERN CALIFORNIA

W. H. Dall; 2 young females (16290). *Anton Dohrn;* from Venice Mar. Biol. Sta.; 1 ovigerous female (50207).

Genus LOXORHYNCHUS Stimpson

Loxorynchus Stimpson, Proc. Boston Soc. Nat. Hist., vol. 6, Feb., 1857, p. 84; type, *L. grandis* Stimpson.

Loxorhynchus Stimpson, Journ. Boston Soc. Nat. Hist., vol. 6, 1857, p. 451 [10]; correction of *Loxorynchus*.

Carapace pyriform, tuberculate or spinous, and pubescent. Gastric region large, convex. Hepatic region small, prominent, armed with one or two stout spines. Rostrum bifid, more or less deflexed; horns divergent. Orbits imperfect, interrupted above and below by a deep, longitudinal sinus; ocular cavity subtubular. Eyes rather short, retractile, not concealed. Preorbital tooth strong; postorbital tooth acute, almost longitudinal; below it there is a smaller spine just outside the basal article of the antenna. This article is broad, nearly quadrate, armed at the outer apex with an acute spine extended laterally; movable part of the antenna not concealed by the rostrum; flagellum long. Epistome large. Pterygostomian region tuberculate.

Ischium of external maxillipeds strongly produced and rounded at the antero-internal angle; the same angle of the merus is subrectangular, internal angle deeply notched for insertion of palpus. Chelipeds of adult male much enlarged, longer than next leg; fingers gaping, extremities dentate, a large basal tooth on the dactylus. Legs diminishing in length from the first to the fourth pair; subcylindrical; dactyli stout, unarmed. Abdomen with seven separate segments in both sexes.

Inhabits the west coast of California and Lower California, Mexico.

KEY TO THE SPECIES OF THE GENUS LOXORHYNCHUS

A^1. Carapace multispinous. Hepatic region armed with two large spines. Front strongly deflexed------------------------------------**grandis**, p. 198.

A^2. Carapace covered chiefly with a few large bosses or tubercles, each tipped with a spine. Hepatic region armed with one large spine. Front moderately deflexed------------------------------------**crispatus**, p. 200.

LOXORHYNCHUS GRANDIS Stimpson

SHEEP CRAB; KELP CRAB

Plates 64 and 65

Loxorynchus grandis Stimpson, Proc. Boston Soc. Nat. Hist., vol. 6, Feb., 1857, p. 85 (type-locality, near San Francisco, California; holotype, Cat. No. 15376, U. S. N. M.); Ann. Lyc. Nat. Hist. New York, vol. 7, 1859, p. 49.

Loxorhynchus grandis Stimpson, Journ. Boston Soc. Nat. Hist. vol. 6, 1857, p. 452 [12], pl. 20, fig. 1; pl. 22, fig. 1.—Holmes, Occas. Papers Calif. Acad. Sci., vol. 7, 1900, p. 29.—Rathbun, Proc. U. S. Nat. Mus., vol. 35, 1908, p. 342, pls. 45, 46 and 47, fig. 1; fossil.

Diagnosis.—Carapace multispinous. Two large hepatic spines. Front strongly deflexed. Two tubercles on basal antennal segment. Upper margin of manus of adult male less than twice its width.

Description.—Carapace covered with spines or with spines and tubercles. Surface clothed with a vesicular pubescence mixed with longer, curved, yellow bristles which are most numerous about the spines and form a longitudinal row extending from either side of the gastric region to the extremity of the rostrum. A stout spine on the margin of the hepatic region and another equally large just below the margin. A tubercle on the edge of the supraocular eave just above the eye. The basal antennal article besides the antero-external spine has a tubercle on the outer margin and another on the anterior margin at the insertion of the next article.

Chelipeds of adult male much enlarged and about one and one-fourth times the length of the carapace. Outer surface of merus and carpus and upper surface of proximal half of manus tuberculate; merus subtriangular, three or four spines on upper margin. Hand much swollen, about two-thirds as thick as high and about two-thirds as high as its superior length. Fingers gaping for less than half their length.

Legs subcylindrical; merus with a few spines or tubercles on distal half of upper margin, most evident in the first pair; carpus elongate, with a few tubercles or spines, and a longitudinal depression on the outer surface; propodus smooth. The vesicular pubescence on the legs is for the most part longer than on the carapace and extends to the horny tips of the dactyls; a few curved, yellow bristles are intermixed.

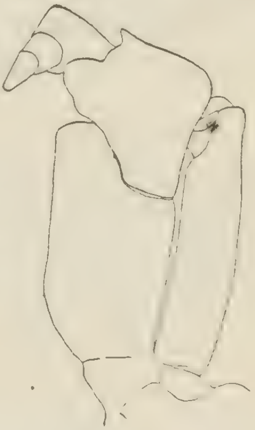


FIG. 80.—LOXORHYNCHUS GRANDIS (54738), MAXILLIPED, × 1.87

Measurements.—Male (18640), length of carapace to tip of horn 200 mm., width 159 mm., length of propodus of cheliped on lower margin 120, on upper margin 66, width of same 46, thickness 34.5, length of movable finger 64 mm.

Range.—From San Francisco, California, to Point San Bartholome, Lower California; to a depth of 68 fathoms; not common. Fossil in Fresno County, California, in Lower Pliocene series.

Material examined.—

CALIFORNIA

Near San Francisco; Lieut. W. P. Trowbridge, U. S. A., collector; 1 female, holotype (15376).

Santa Barbara; 1880; D. S. Jordan; 1 male (3050) covered with bryozoans.

Off Santa Barbara; lat. 34° 19′ 30″ N.; long. 119° 44′ 15″ W.; 68 fathoms; gn. M.; 54° F.; May 11, 1889; station 2973, *Albatross;* 1 male (17379).

San Pedro Bay: deep water; July, 1896; H. N. Lowe; 1 female, very large (19866).

San Pedro; 10 fathoms; H. N. Lowe; 1 male (23047).

San Pedro Breakwater; June, 1911; *Anton Dohrn* (P. S. Barnhart), from Venice Mar. Biol. Sta.; 1 male, 1 female (50257).

Santa Catalina Island; April, 1897; *Albatross;* 1 male, 1 female (20151), entirely concealed by algae.

China Point, San Clemente Island; July 17, 1908; haul 1556; 1 young (Scripps Inst.).

San Diego; Dr. C. B. R. Kennerly; 1 carapace of large specimen (17572), labeled by Stimpson.

San Diego Bay; ¾ k. E. NE. Point Loma Lighthouse; 6½ fathoms; M. S.; April 1, 1896; station 3621; *Albatross;* 1 small male (20150).

California; origin uncertain; 1 male (54738).

LOWER CALIFORNIA (WEST COAST)

Ensenada; Enrique Gonzalez; photograph of specimen identified and returned to A. E. Herrera.

San Martin Island (about lat. 30° 30′ N.); caught with hook; March 30, 1881; Lieut. H. E. Nichols, U. S. N., U. S. C. S. S. *Hassler;* 1 male, very large (18640).

Point San Bartholome; 1911; *Albatross;* 1 female (57562).

LOXORHYNCHUS CRISPATUS Stimpson

Plates 66 and 67

Loxorhynchus crispatus Stimpson, Journ. Boston Soc. Nat. Hist., vol. 6, 1857, p. 453 [13], pl. 22, figs. 2–4 (type-locality, San Miguel Island near San Pedro, California; types, Cat. No. 2083, U. S. N. M.).—Rathbun, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 74.—Holmes, Occas. Papers Calif. Acad. Sci., vol. 7, 1900, p. 30.

Diagnosis.—Carapace covered chiefly with a few large, spine-tipped bosses or tubercles. One large hepatic spine. No tubercles on basal antennal segment. Upper margin of manus of adult male more than twice its width.

Description.—The carapace bears 9 or 10 large, conical bosses or tubercles covered except at the tip with very thick, short hair, which makes them appear hemispherical with a small shining point emerging; besides there are a number of smaller, similar tubercles symmetrically arranged. As in *L. grandis*, a row of curled hairs extends from either side of the gastric region forward on to the rostral horns. Rostrum moderately inclined. Only one hepatic spine, its anterior margin sloping backward to the tip. No tubercle on the margin of the supraocular eave or on the basal antennal article.

Chelipeds of old male elongate, over twice as long as carapace; merus with four spines above, two at the distal end and two near the proximal end; carpus with some blunt tubercles and spines, inner angle prominent, bluntly rounded; hands little compressed, less than two-thirds as thick as high and about two-fifths as high as its superior length; proximal half of upper margin spined; fingers gaping for more than half their length. Ambulatory legs unarmed. Sternal segments deeply furrowed.

Measurements.—Male (2193), length of carapace to tip of horns 114, width 84, length of cheliped about 272; length of propodus of cheliped on lower margin 125, on upper margin 77.7, width of same excluding spines 30.7, thickness 21, length of movable finger 50 mm. Male (2000, M. C. Z.), length of carapace to tip of horns 133.5, width 96, length of cheliped about 251; length of propodus of cheliped on lower margin 113, on upper margin 68.6, width of same excluding spines 30.2, thickness 19, length of movable finger 46.6 mm.

Range.—California from San Francisco to San Diego; 4 to 74 fathoms.

Material examined.—

CALIFORNIA

San Francisco; received December, 1859; T. G. Cary; 1 male of unusual size (2000, M. C. Z.); 1 large male, 1 large ovigerous female (334, M. C. Z.); identified by Stimpson.

Off Farallon Islands; 20 fathoms; October 3, 1899; *Albatross:* 2 males, 1 ovigerous female (33455).

Monterey; 1880; D. S. Jordan; 6 males, 5 females (5876).

Monterey Bay: 100 feet; brought in by Chinese fishermen; Harold Heath; 2 males, 1 female (22875). *Albatross;* 1 male (26117).

Monterey Bay; 1904; *Albatross:* Point Pinos Lighthouse, S. 9° E., 4.5 miles; 46–56 fathoms; crs. S. Sh. R.; June 7; station 4551; 1 female with Rhizocephalid parasite; 1 young (46591). Point Pinos Lighthouse, S. 73° E., 4 miles; 66–73 fathoms; gn. M. R.; June 9; station 4552; 1 female, 1 young. Point Pinos Lighthouse, S. 67° E., 3.7 miles; 65–74 fathoms; R.; June 9; station 4553; 1 male (46533).

Off Point Conception; January 8, 1889; *Albatross:* Lat. 34° 25′ 25″ N.; long. 120° 20′ 00″ W.; 31 fathoms; gy. S. brk. Sh.; station 2908; 1 male, 1 female (15547). Lat. 34° 24′ 30″ N.; long. 120° 20′ 00″ W.; 44 fathoms; fne. gy. S.; station 2907; 1 young (17363).

San Miguel Island; Lieut. W. P. Trowbridge, U. S. Army; 2 males, 1 female (2083), types (1 male holotype, 2 paratypes).

Off San Miguel Island; 1889; *Albatross:* Lat. 34° 07′ 00″ N.; long. 120° 33′ 30″ W.; 53 fathoms; brk. Sh. S.; January 5; station 2895; 1 female (15546). Lat. 34° 04′ 00″ N.; long. 120° 19′ 30″ W.; 26 fathoms; gy. S.; temp. 54.9° F.; February 9; station 2958; 1 male (15600).

Off Santa Rosa Island; off Brockway Point; 38 to 45 fathoms; April 15, 1904; station 4431, *Albatross;* 1 male, 2 females, 3 young (46590).

Off Santa Cruz Island; lat. 34° 01′ 30″ N.; long. 119° 29′ 00″ W.; 36 fathoms; G. brk. Sh.; temp. 57° F.; February 12, 1889; station 2975, *Albatross;* 1 young (17361).

Santa Monica Bay; 3 miles SW. by S., of Venice; 22 fathoms; August 2, 1913; *Anton Dohrn,* Venice Mar. Biol. Sta.; 1 male, 1 young (50248).

Between Venice and Rocky Point, near San Pedro; August 12, 1914; *Anton Dohrn,* Venice Mar. Biol. Sta.; 1 female, ovigerous (50006).

San Pedro; about 4 fathoms; H. N. Lowe; 1 female (23046).

Off Wilmington; February 5, 1889; *Albatross:* Lat. 33° 36′ 00″ N.; long. 118° 09′ 30″ W.; 27 fathoms; fne. gy. S. St.; station 2939; 1 male (15545). Lat. 33° 35′ 15″ N.; long. 118° 08′ 30″ W.; 47 fathoms; fne. gy. S. St.; temp. 58° F.; station 2938; 3 males (15601).

Santa Catalina Island: Entrance to Catalina Harbor; December 30, 1912; *Anton Dohrn,* Venice Mar. Biol. Sta.; 1 young male (50247). Off Santa Catalina Island; 50 fathoms; H. N. Lowe; 1 young (29953). 1½″ off Avalon, Dakins Cove; 47 fathoms; fne. gy. S.; temp. 51.7° F.; April 8, 1897; station 3662, *Albatross;* 2 young (20258).

Off San Nicolas Island; lat. 33° 18′ 00″ N.; long. 119° 24′ 00″ W.; 45 fathoms; crs. gy. S. brk. Sh.; February 13, 1889; station 2981, *Albatross;* 1 young (17360).

Off San Diego; lat. 32° 33′ 30″ N.; long. 117° 16′ 00″ W.; 36 fathoms; gy. S.; temp. 58.2° F.; January 26, 1889; station 2934, *Albatross;* 1 young (17362).

Southern California; *Anton Dohrn,* Venice Mar. Biol. Sta.; 1 immature male (50246).

California: C. M. Scammon; 1 male (2193). John Mullan; 1 male (11159). Bur. Fisheries; 1 ovigerous female (49956).

Genus CHORILIA Dana

Chorilia DANA, Amer. Journ. Sci., ser. 2, vol. 11, 1851, p. 269; type, *C. longipes* Dana; U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 91.

Carapace subpyriform, convex, spinous or tuberculate or both. Spines of rostrum long, slender, diverging from near the base. Preocular spine present; supraocular hood separated by a U-shaped sinus from the postocular cup; orbit open below; eyestalks restricted at middle. Basal segment of antenna long and narrow; movable portion more or less exposed beside the rostrum. Chelipeds enlarged, manus compressed. Ambulatory legs slender, almost unarmed, first pair much the longest.

Pacific coast of North America from Alaska Peninsula to San Diego, California; Japan. 18 to 650 fathoms.

CHORILIA LONGIPES Dana

CHORILIA LONGIPES TURGIDA Rathbun

Plate 224, figs. 1–3; plate 225

Chorilia longipes Dana, Amer. Journ. Sci., ser. 2, vol. 11, 1851, p. 269 (type-locality, *ad oras Oregonenses*; type not extant); U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 91; atlas, 1855, pl. 1, fig. *5a–d*.

Hyastenus (*Chorilia*) *longipes* Miers, Journ. Linn. Soc. London, vol. 14, 1879, p. 658.—Holmes, Occas. Papers California Acad. Sci., vol. 7, 1900, p. 33.

Hyastenus (*Chorilia*) *japonicus* Miers, Proc. Zool. Soc. London, 1879, p. 27, pl. 1, fig. 2 (type-locality, lat. 41° 40′ N., long. 141° 10′ E., 100 fathoms; type in Brit. Mus.).

Hyastenus longipes Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 56.—Rathbun, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 85, pl. 7; vol. 17, 1894, p. 62, pl. 1, fig. 5.

Hyastenus japonicus Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 56.

Chorilia longipes turgida Rathbun, Proc. U. S. Nat. Mus., vol. 64, art. 14, 1924, p. 3 (type-locality, off San Diego, 359 fathoms; holotype, male, Cat. No. 15500, U. S. N. M.).

Diagnosis.—Hepatic spine when present smaller than lateral branchial spine. Preocular spine directed obliquely outward. Spines and tubercles of carapace numerous.

Description of typical form.—Carapace covered with numerous tubercles and some short unequal spines; the largest spine is that at the widest part of the carapace on the margin of the branchial region. Other important spines are two median gastric, which with two smaller lateral spines or tubercles form a rhomb. A blunt ridge or tubercle on hepatic region. Cardiac region at its narrowest, more than half its greatest width. Two median cardiac tubercles, one larger intestinal tubercle. Rostrum about half (it may be more or less than half) as long as remainder of carapace; horns gradually tapering, acuminate. A slender preocular spine.

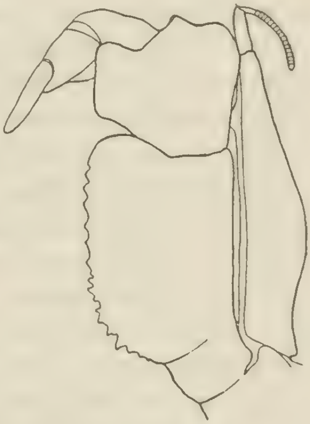


Fig. 81.—Chorilia longipes (31637), maxilliped, × 4.3

Two spines on outer margin of basal antennal segment, followed posteriorly by a triangular tooth situated just outside the segment. Merus of outer maxillipeds with concave surface and prominent outer angle; ischium with a broad and deep, longitudinal sulcus.

Chelipeds massive; merus prismatic, rough with granules, and with tubercles and spines arranged in rows. Carpus similarly rough, inner margin lamellate, the lamella bearing a backward-pointing lobe at the proximal end. Manus compressed, upper edge thin. Fingers narrow, gaping in their basal half or two-thirds; dactylus as long or nearly as long as upper margin of palm, with a subbasal tooth; immovable finger with a basal tooth; distal ends of fingers meeting, their edges crenulate.

The legs of the first pair exceed the cheliped little or not at all; the other pairs are considerably shorter and themselves diminish successively in length. The merus of each terminates in a short, sharp point above; the dactylus is slender and curved.

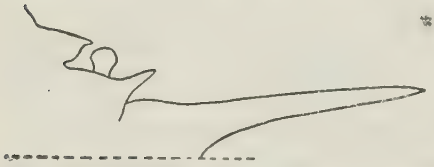


FIG. 82.—CHORILIA LONGIPES TURGIDA, FRONT AND ORBIT, × 1.6. (AFTER RATHBUN)

Description of Chorilia longipes turgida.—In the southern part of its range, the carapace of *C. longipes* becomes much rougher, more spinous, the tubercles replaced by short sharp spines; the hepatic region bears a spine on its margin instead of a tubercle or blunt ridge; the width of the carapace increases notably in proportion to the length, the branchial regions are inflated and approach nearer the median line, so that the distance between them is not more than half the greatest width of the cardiac region and is often much less; the movable segments of the antennal peduncle are longer and more slender.

Occasional specimens intermediate between the typical and the *turgida* forms have been found from Oregon southward.

Measurements.—Male of typical form (31634), length of carapace on median line 53.2, width 44.4 mm. Male holotype of subspecies *turgida* (15500), length of carapace on median line 56, width 50 mm.

Range of the species.—Shumagin Bank and Kodiak, Alaska, to San Diego, California; Japan. 18 to 650 fathoms. The typical form ranges from the northern limit to Monterey Bay; the subspecies *turgida*, from Monterey Bay to San Diego. Another subspecies, *C. l. japonica* (Miers) inhabits Japanese waters.

Material examined.—See table, pages 205-209.

Genus ROCHINIA A. Milne Edwards

Amathia Roux, Crust. Médit., 1828, p. [5]; type, *A. rissoana* Roux.—Milne Edwards, Hist. Nat. Crust., vol. 1, 1834, p. 285. Not *Amathia* Lamouroux, 1816, a genus of polyps.

Pisa (Amathia) De Haan, Fauna Japon., 1839, pp. 78 and 84.

Rochinia A. Milne Edwards, Crust. Rég. Mex., 1875, p. 86; type, *R. gracilipes* A. Milne Edwards.

Scyramathia A. Milne Edwards, Comptes Rendus Acad. Sci., Paris, vol. 91, 1880, p. 356; type, *S. carpenteri* Norman.—Alcock, Journ. Asiat. Soc. Bengal, vol. 64, 1895, p. 201.—A. Milne Edwards and Bouvier, Expéd. Sci. *Travailleur* et *Talisman*, Crust. Déc., pt. 1, 1900, p. 131.

Anamathia Smith, Proc. U. S. Nat. Mus., vol. 7, 1885, p. 493; type, *A. rissoana* (Roux).—Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 25.

Rachinia Alcock, Journ. Asiat. Soc. Bengal, vol. 64, 1895, p. 165.

Carapace pyriform or elongate-triangular, with posterior margin rounded; armed with spines or spines and tubercles. Hepatic and

Material examined of Chorilia longipes

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temp.	Date	Albatross Station	Specimens	Cat. No.	Form
Alaska:	° ′ ″	° ′ ″			°F					
Off Shumagin Bank	54 46 00	157 43 30	138	M. G.	37.4	Aug. 28, 1890	3339	2 young	18185	Typical.
Off Sitkalidak Island, Kodiak.	57 00 00	153 18 00	69	gn. M.	44	Aug. 10, 1888	2855	1♂	15496	Do.
Chilkoot Inlet	Indian Rock, S.63° E., 3.3 miles.		45–51	gn. M.	40	July 16, 1903	4254	1♂	31641	Do.
Stephens Passage	Thistle Ledge, N.53° E., 1.7 miles.		131–188	R. brk. Sh.	40.9	July 14, 1903	4253	1♂ 8♀	31642	Do.
Kasaan Bay, Prince of Wales Island.	East end Long Island, N. 55° W., 3 miles.		101–123	gy. gn. M. crs. S. Sh.	44.1	July 11, 1903	4246	1♂ 3♀	31632	Do.
Do.	East end Long Island, N. 78° W., 1.1 miles.		89–114	gn. M. fne. S. brk. Sh.	44.3	do.	4247	1 y. ♀	31648	Do.
Junction of Clarence Strait and Behm Canal.	Center of Guard Island, S. 28° E., 2.1 miles.		206–248	crs. S. rky.	48.8	July 9, 1903	4239	2♂ 1♀	31640	Do.
Vicinity of Naha Bay, Behm Canal.	Indian Point, N. 70° E., 5 miles.		108–240	rky.	42.4	July 7, 1903	4230	2♂ 5♀	31636	Do.
Do.	Indian Point, N. 18° E., 0.9 miles.		41–134	G. Sponge.	47.8	do.	4228	5♂ 6♀	31635	Do.
Vicinity of Yes Bay, Behm Canal.	East end Square Island, Spacious Bay, N. 85° W., 1 mile.		192–198	gn. M.	42.6	July 8, 1903	4237	1♂	31639	Do.
Do.	East end Square Island, Spacious Bay, S. 34° W., 1.2 miles.		147–205	R. crs. S.	42.8	do.	4236	1♂ 1 y	31638	Do.
Do.	East end Square Island, Spacious Bay, S. 48° W., 1.9 miles.		130–193	gy. M. bk. Sp.	42.8	do.	4235	2♂ 2♀	31637	Do.
Do.	Cannery Point, Yes Bay, N. 54° W., 1.5 miles.		45	gy. M. rky.	43.7	do.	4234	1 y. ♀	31647	Do.
Boca de Quadra	Center of Cygnet Islet, S. 7° W., 2¼ miles.		149–181	dk. gn. M.	43.6	July 6, 1903	4225	4♂	31633	Do.
Do.	Center of Cygnet Islet, S. 14° W., 4.2 miles.		156–166	dk. gn. M.	43.7	do.	4224	1♂	31634	Do.
British Columbia:										
Off Queen Charlotte Sound	51 14 00	129 50 00	204		42.6	Aug. 31, 1888	2861	3♂ 3♀	21246	Do.
Queen Charlotte Sound	50 49 00	127 36 30	238	gy. S. P.	44.7	Sept. 1, 1888	2862	9♂ 11♀ 2 y	15497	Do.
Do.	Off Fort Rupert; center of Round Island, N. 22° W., 1.5 miles.		25–30	vol. S. G. brk. Sh. Sponge.	49.1	June 25, 1903	4203	4 y. ♀	31646	Do.

Material examined of Chorilia longipes—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Albatross Station	Specimens	Cat. No.	Form
	Latitude N.	Longitude W.								
British Columbia—Continued					°F					
Gulf of Georgia; Halibut Bank.	Cape Roger Curtis, Bowen Island, N. 89° E., 11 miles.		28–44	fne. gy. S	53.8	June 20, 1903	4196	1 y. ♀	31645	Typical.
Do	Cape Roger Curtis, Bowen Island, S. 89° E., 10.8 miles.		23–18	gn. M. fne. S	50.3	do	4193	3♂ 8♀ (small)	31643, 50976	Hepatic spine on 10 specimens.
Gulf of Georgia; off Nanaimo, Vancouver Island.	Sharp Point, Nanaimo Har., S. 1° W., 1.6 miles.		89–97	gn. M. fne. S	47.1	June 19, 1903	4192	1 y. ♀	31644	Typical.
	° ′ ″	° ′ ″								
Straits of Fuca; south shore of Vancouver Island.	48 29 40	124 40 10	135	gy. S. G	55	Aug. 28, 1891	3449	4	17081	Do.
Do	48 27 50	124 42 40	152	gy. S. rky	44.2	Sept. 1, 1891	3454	1♂	17085	Do.
Do	48 26 50	124 39 35	151	G	44	Aug. 28, 1891	3450	2	17082	Do.
Do	48 25 10	124 37 50	106	G. St	45	do	3451	2	17083	Do.
Do	48 24 40	124 29 10	125	rky. bk. G	44.5	Aug. 29, 1891	3452	1♂	17084	Do.
Do	48 24 20	124 24 40	123	gy. S. P	44.5	Sept. 2, 1891	3459	2	17086	Do.
Do	48 18 30	123 22 00	56	gy. S. Sh. rky	48.5	Sept. 4, 1891	3466	1♀	17088	Do.
Do	48 16 00	123 45 05	100	rky	44	Aug. 27, 1891	3445	1	17080	Do.
Washington:										
Off Cape Flattery	48 33 00	124 53 00	59	bk. S. M	45.5	Sept. 25, 1888	2877	1♀	15495	Do.
Do	48 30 00	124 57 00	27	R. Sh	50.3	Sept. 24, 1888	2874	1♂	15499	Do.
Do	48 21 45	124 50 30	77	gn. M. S	45	May 14, 1897	3673	1 y	21765	Do.
Straits of Fuca	48 17 20	124 07 25	114	gy. S. G. R	44.4	Sept. 2, 1891	3461	2	17087	Do.
Do	48 13 30	123 11 20	97	gn. M. P	46	Aug. 27, 1891	3443	2	17079	Do.
Admiralty Inlet	48 12 00	122 49 00	40	P	51.7	Sept. 6, 1888	2865	1♂	15494	Do.
Oregon:										
Off Columbia River	46 09 00	124 22 30	68	gy. S	45.8	Oct. 13, 1888	2882	1♂	15498	Typical.
Off Cape Kiwanda	Cape Kiwanda, N. 31° E., 12.2 miles.		50	fne. gy. S		Sept. 3, 1914	H5732	1 y	52760	Do.
Off Alseya River	44 29 30	124 17 00	42	fne. gy. S	56	Sept. 2, 1889	3085	1 y	17626	Do.
Heceta Bank	43 59 00	124 56 00	46	C. Sh	47.7	Oct. 19, 1888	2889	1♂	16776	Hepatic spine, otherwise typical.
California:										
Off Point Arena	38 58 10	123 57 05	75	fne. S. M	48.4	Sept. 25, 1890	3350	2♂ 2♀	16030	Typical.
S. of the Farralones	37 37 00	123 02 00	68	S. C. R	49	Apr. 24, 1897	3672	2♂	26115	Do.
Off Pigeon Point	37 08 00	122 47 00	296	fne. gy. S	41.8	Mar. 12, 1890	3112	4♂ 4♀	15515	Do.
Off Point Ano Nuevo	37 06 00	122 30 00	62	M		do	3114	1♂ 1♀	15512	Do.
Monterey Bay	Off Santa Cruz 36 55 10	122 23 50	240	bk. S. R	43.7	Apr. 12, 1890	3205	1 y. ♂	15514	Do.

Do.	36 49 20	122 12 30	456	gn. M.	52.8	Mar. 13, 1890	3126	3♂	15516	Intermediate in width, otherwise typical.
Do.	36 45 00	121 53 00	68	M. S. Bldr.		Apr. 13, 1897	3666	1♂	26116	Typical.
Do.	36 47 00	122 11 00	278	gn. M. fne. S.	42.7	Apr. 16, 1897	3669	1♂	26371	*turgida.*
Do.	Point Pinos Lighthouse, S. 3° E., 9.3 miles.		285-357	gn. M.		May 12, 1904	4461	2♂ 5♀ (2 ovig., 1 covered by anemone).	46585	Intermediate.
Do.	Point Pinos Lighthouse, S. 5° W., 8.5 miles.		161-265	gn. M.	44.4	May 13, 1904	4462	1♂	46586	*turgida?* carapace lacking.
Do.	Point Pinos Lighthouse, S. 33° E., 5.3 miles.		65-144	gy. S. R.		May 14, 1904	4471	1♂ 1 ovig. ♀	46587	*turgida.*
Do.	Point Pinos Lighthouse, S. 13° E., 8.7 miles.		347-383	gn. M.	41.9	May 20, 1904	4507	1 y.♂	46753	Do.
Do.	Point Pinos Lighthouse, S. 39° E., 10.7 miles.		391-406	gn. M. R.		May 23, 1904	4514	1♂	46588	Do.
Do.	Point Pinos Lighthouse, S. 18° E., 8.1 miles.		198-495	gn. M. crs. S. Sh.		do.	4515	1 y. ♀	46589	Typical.
Do.	Point Pinos Lighthouse, S. 9° E., 4.5 miles.		46-56	cr. S. Sh. R.		June 7, 1904	4551	1 y.♂	46754	Do.
Do.	Point Pinos Lighthouse, S. 67° E., 3.7 miles.		65-74	R.		June 9, 1904	4553	1 y.♂	46667	Do.
Off Point Carmel	36 31 00	121 59 00	162	gy. S. R.	41.5	Apr. 3, 1890	3183	1 y.♂	21247	*turgida.*
Off Point Sur	36 14 00	121 58 40	298	yl. S. M.	41.1	do.	3187	1 y.♂	16777	Carapace wide; no hepatic spine.
Off San Simeon Bay	35 25 50	121 09 10	160	gn. M.	44.4	Apr. 5, 1890	3193	1♂	15511	*turgida.*
W. of Point Buchon	Pine Mount, N. 42° E. 35 18 30	121 28 00	440		39.9	Apr. 27, 1911	5696	1♂ 1♀	55754	Do.
Off Point Conception	34 12 30	120 32 30	145	fne. gy. S. M.	48.6	Jan. 5, 1889	2893	1♀	15596	Do.
Off San Miguel Island	34 10 45	120 16 45	267	gn. M.	48	Feb. 9, 1889	2960	1♂	15508	Intermediate in width, otherwise typical.
Do.	33 55 30	120 28 00	376	yl. M.	42.8	Jan 6, 1889	2896	2♂ 4♀	15509	*turgida.*
Do.	Harris Point, S. 7° E., 9.8 miles.		264-271	gn. M.		Apr. 15, 1904	4436	3♂ 6♀ (5 ovig.)	46584	Do.
Off Santa Rosa Island	33 57 30	120 18 30	52	fne. gy. S. R.	53.1	Feb. 8, 1889	2956	2♂	15507	Typical.
Do.	Brockway Point, S. 10° E., 7.5 miles.		243-265	gn. M.		Apr. 15, 1904	4433	1♂	46583	*turgida.*
Off Santa Cruz Island	Point San Pedro, N. 35° E., 7 miles.		447-510	bk. M. R.		Apr. 14, 1904	4427	6♂ 4 ovig. ♀	46581	Do.
Do.	Gull Islet, N. 40° E., 2.7 miles.		197-281	bk. S. P. R.		do.	4430	2♀ 2 y	46582	Do.

Material examined of Chorilia longipes—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Albatross Station	Specimens	Cat. No.	Form
	Latitude N.	Longitude W.								
	° ′ ″	° ′ ″			°*F*					
California—Continued										
Off Anacapa Island	33 56 30	119 22 30	388	gn. M		Feb. 12, 1889	2979	3♂ 4♀ (2 ovig.)	16031	*turgida.*
Do	33 49 45	119 24 30	603	gn. M	38.9	do	2980	4♂ 6 ♀	15502	*turgida;* 1 specimen with sharp, hepatic tubercles.
Off Wilmington	33 38 45	118 13 45	20	gy. S. brk. Sh		Feb. 5, 1889	2942	1 y	18184	*turgida.*
Off Santa Barbara Island	33 24 45	119 07 00	178	S. M. G	46.7	Feb. 13, 1889	2982	2♀	15510	Do.
Do	Northeast point, N. 89° W., 8.6 miles.		302–638	gn. M		Apr. 11, 1904	4415	4♂ 2♀	46578	Do.
Do	Southwest rock, N. 49° W., 4.7 miles.		323–448	dk. gn. M. R		Apr. 12, 1904	4416	4♂ 3♀ (1 ovig.) 6 y.	46534	Do.
Do	Southwest Rock, N. 8° E., 6.9 miles		238–310	dk. M. S. R		do	4418	3♂ 1♀ 16 y	46579, 46749	Do.
Off San Nicolas Island	East point, S. 73° W., 8.4 miles.		238	bk. M. R		do	4419	1 y	46750	Do.
Do	East point, S. 77° W., 5.7 miles.		32–33	fne. gy. S		do	4420	2 y	46751	Do.
Do	East point, S., 7.6 miles		216–339	gy. S. bk. P. Sh		Apr. 13, 1904	4423	12♂ 6♀ 11 y	46580, 46752	Do.
West of San Nicolas Island	33 13 30	120 04 30	451			Apr. 26, 1911	5693	1♂ 1♀ 3♂ 2♀	55758 Amer. Mus	Do.
Off Santa Catalina Island	Southeast point, N. 19° 30′ E., 3.2 miles.		478–600	gy. S. R		Apr. 9, 1904	4407	5♂ 5♀	46577	Do.
Northwest of San Clemente Island.	33 08 00	118 40 00	414	gy. S	41.4	May 8, 1888	2839	34	21897	Do.
San Clemente Island						July 19, 1905		23♂ 16♀ 12 y	Scripps Inst	Do.
Between Santa Catalina Island and San Diego.	33 04 30	117 42 00	464	gn. M	46.5	Feb. 4, 1889	2937	1♂ 1♀	15505	Do.
Vicinity of San Diego	32 49 00	117 27 30	359	M	49	do	2936	9♂ 12♀	15500, type lot; 15501, 20499.	Do.
Do	32 47 30	118 10 00	417	bk. S. G	41	Jan. 23, 1889	2928	16	15504, 46664	Do.
Do	32 43 00	117 51 00	313	gn. M	43.3	do	2927	9♂ 12♀	15503	*turgida;* a few are intermediate, some with hepatic tubercle
Do	32 33 30	117 16 00	36	gy. S	58.2	Jan. 26, 1889	2934	1♂	15506	*turgida.*
Do	Point Loma Lighthouse, N. 52° E., 7.2 miles.		129–143	gn. M. fne. S. R	48	Mar. 4, 1904	4311	1y. ♀	46567	Do.
Do	Point Loma Lighthouse, N. 56° E., 7.9 miles.		95–135	fne. gy. S. R		do	4312	1♂ 1 ovig. ♀	46568	Intermediate.

Do	Point Loma Lighthouse, N. 36° E., 11 miles.	471-510	gn. M. fne. S	40	Mar. 5, 1904	4317	3 y. ♂ 2 y. ♀	46569	*turgida.*
Do	Soledad Hill, Point La Jolla, S. 50° E., 5.6 miles.	261-213	sft. gn. M	41	Mar. 8, 1904	4326	1♂ 1 ovig. ♀	46570	Do.
Do	Point Loma Lighthouse, N. 27° E., 12.2 miles.	301-487	gn. M	41.7	Mar. 9, 1904	4333	1 ovig. ♀	46571	Do.
Do	Point Loma Lighthouse, N. 36° E., 11.2 miles.	287-369	gn. M	41.5	Mar. 10, 1904	4339	13♂ 16♀ (3 ovig.)	46572	Do.
Do	South Point South Coronado Island, N. 79° E., 3.3 miles.	266-323	gy. S. bk. Sp	42	Mar. 11, 1904	4341	2 ovig. ♀	46573	Do.
Do	Point Loma Lighthouse, N. 35° E., 4.2 miles.	46-50	dk. gn. M. fne. S	50.4	Mar. 12, 1904	4346	1 y. ♂	46665	Do.
Do	Point Loma Lighthouse, N. 36° E., 12.3 miles.	423-488	sft. gn. M	40	Mar. 14, 1904	4351	3 y	46746	Do.
Do	Point Loma Lighthouse, N. 49° E., 15.6 miles.	646-650	gn. M	38.5	do	4354	1 y. ♀	46574	Do.
Do	Point Loma Lighthouse, N. 85° E., 9 miles.	98-220	gn. M. br. Sp. R	49	Mar. 15, 1904	4359	2 y	46747	Do.
Do	Point Loma Lighthouse, S. 82° E., 10 miles.	260-284	gn. M. S. R	43	Mar. 16, 1904	4369	1 ovig. ♀	46575	Do.
Do	Point Loma Lighthouse, N. 81° E., 9.5 miles.	89-145	gy. S. R		Mar. 6, 1904	4371	1 immature ♀	46666	Do.
Do	Point Loma Lighthouse, N. 57° E., 11 miles.	158-591	gn. M. S		Mar. 17, 1904	4378	2 ♂	46535	Do.
Do	32 44 50 117 48 45	261-285	fne. gy. S. R		Apr. 7, 1904	4399	2 y	46748	Do.
Do	32 50 20 118 03 30	500-507	gn. M	40.2	Apr. 8, 1904	4400	1 ♂ 1 ovig. ♀	46576	Do.

lateral epibranchial spines prominent. Rostrum consisting of two spines usually long and slender. Eyes small, retractile against a postocular process; the supraocular eave usually terminates in a tooth or spine. Basal antennal article narrow and either unarmed, or with one or more spines. Merus of outer maxillipeds as broad as ischium, truncated distally, slightly produced at the antero-external angle, and bearing the palp at the antero-internal angle.

Chelipeds usually slender, often greatly elongated in the male, with the palms broadened and compressed. Ambulatory legs slender and elongate; first pair markedly the longest. Abdomen in both sexes composed of seven distinct segments.

East coast of America from 40° N. latitude to Barbados and from Cape Frio, Brazil, to Cape Horn; northeast Atlantic to South Africa; Mediterranean; Indian Ocean and Australia to Japan; Galapagos Islands. Depth, 30 to 738 fathoms.

KEY TO THE AMERICAN SPECIES OF THE GENUS ROCHINIA

- A¹. Median spines 6; gastric spines 6; 2 spines on basal antennal article. **crassa**, p. 210.
- A². Median spines or tubercles fewer than 6; gastric spines or tubercles fewer than 6.
  - B¹. Median tubercles 3; gastric tubercles 3.
    - C¹. Rostrum longer than remainder of carapace .... **cornuta**, p. 217.
    - C². Rostrum shorter, less than half as long as remainder of carapace. **gracilipes**, p. 218.
  - B². Median spines or tubercles 4; gastric spines or tubercles 4.
    - C¹. Spines of carapace and rostrum long and slender; a spine at angle of buccal cavity .... **hystrix**, p. 214.
    - C². Spines or tubercles of carapace short or of moderate length; no spine at angle of buccal cavity.
      - D¹. Dorsal tubercles mostly large and flat-topped .... **umbonata**, p. 222.
      - D². Dorsal tubercles or spines acute, not large and flat-topped.
        - E¹. Two spines on basal antennal article; an oblique row of 3 spines from the anterior, median, gastric spine to the marginal, branchial spine at the widest part of the carapace...... **vesicularis**, p. 221.
        - E². Only one spine or tooth on basal antennal article; an oblique row of more than 3 spines from the anterior, median, gastric spine to the marginal, branchial spine.
          - F¹. An oblique row of 4 spines from the anterior, median, gastric spine to the marginal, branchial spine; 3 branchial spines (paired) .... **tanneri**, p. 216.
          - F². An oblique row of 5 spines from the anterior, median, gastric spine to the marginal, branchial spine; 5 branchial spines (paired) .... **occidentalis**, p. 220.

ROCHINIA CRASSA (A. Milne Edwards)

Plates 68, 69 and 226

Amathia crassa A. Milne Edwards, Crust. Rég. Mex., 1879, p. 203, pl. 28, figs. 2–2*b* (type-locality, between Cuba and Florida, lat. 24° 15′ N.; long. 82° 13′ W., 229 fathoms; holotype, Cat. No. 2862, Mus. Comp. Zoöl.); Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 3.

Amathia agassizii SMITH, Bull. Mus. Comp. Zoöl., vol. 10, 1882, p. 1, pl. 2, figs. 2 and 3 (type-locality, off Charleston, South Carolina, lat. 32° 25′ N.; long. 77° 42′ 30″ W., 262 fathoms; type in Mus. Comp. Zoöl.); Proc. U. S. Nat. Mus., vol. 6, 1883, p. 3; Rept. U. S. Commr. of Fish and Fisheries for 1882 (1884), p. 346 [2].

Anamathia crassa SMITH, Proc. U. S. Nat. Mus., vol. 7, 1884 (1885), p. 493.—RATHBUN, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 60, pl. 1, fig. 4; Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 254, pl. 1.—FAXON, Mem. Mus. Comp. Zoöl., vol. 18, 1895, p. 10.

Anamathia agassizii SMITH, Proc. U. S. Nat. Mus., vol. 7, 1884 (1885), p. 493; Rept. U. S. Commr. of Fish and Fisheries for 1885 (1886), p. 624 [20], pl. 1, figs. 2, 3, 3*a*.

Scyramathia agassizi SARS, Norske Nordhavs Exped., Crust., vol. 1, 1885, p. 274.

Diagnosis.—Median spines 6; gastric spines 6; a prominent tooth at angle of buccal cavity; 2 spines on basal antennal article; a stout spine at extremity of merus of ambulatory legs.

Description.—Carapace very convex in both directions with a tendency to median carination; surface pubescent. Median spines, 6 (2 gastric, 1 genital, 2 cardiac, 1 intestinal); a spine (paired) beside each of the median gastric spines; the anterior of the median spines forms the first of an oblique row extending backward to the spine at the lateral angle of the branchial region; a prominent, marginal hepatic spine; three small spines form a triangle on the inner portion of the branchial region. Above the posterior margin there is a small spine on each side of the middle, and over the bases of the last two legs, a row of six or more spinules; above the anterior of these an irregular row of spines extends forward to the anterior angle of the buccal cavity. Spines of rostrum stout, gradually tapering, acuminate, diminishing in length with age. There is a preocular spine, a well-developed postocular lobe, and on the upper orbital margin a small tubercle. Basal antennal article with two spines on the outer margin, pointing downward, forward, and outward.

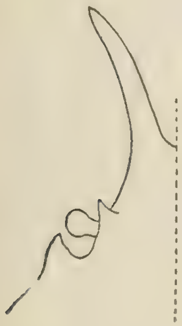


FIG. 83.—ROCHINIA CRASSA, FRONT AND ORBIT, × 1.5. (AFTER RATHBUN)

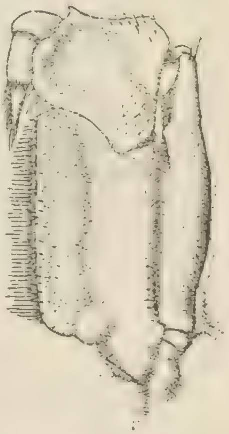


FIG. 84.—ROCHINIA CRASSA, MALE (11213), MAXILLIPED, × 2.9

Chelipeds long, slender, tuberculate, becoming much stouter and more elongate in the old. Merus with a distal spine and one or more spinules near the proximal end. Manus slightly compressed and distally enlarged. Fingers gaping at base, a tooth on the dactyl in the gape; prehensile edges furnished with stout teeth. Ambulatory legs slender, much shorter than the chelipeds in very large males, *Material examined of Rochinia crassa*

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
Southeast of Massachusetts:	° ′ ″	° ′ ″			°F						
Off Nantucket Shoals	39 56 00	69 22 00	208	yl. M	46	Sept. 14, 1881	1032	*Fish Hawk*	2 y.	7309	
Do	39 53 30	69 43 20	148	crs. S. bk. Sp	45	Aug. 6, 1884	2200	*Albatross*	1 ♂	8043	
Do	39 53 00	69 50 30	264	gn. M. S	47	Aug. 4, 1881	939	*Fish Hawk*	1 y.	7310	
South of Marthas Vineyard.	39 55 31	70 39 00	193	S. M		Oct. 4, 1882	1154	do	1 ♂	18758	
Do	39 57 45	70 56 30	195	gn. M. S	44.5	Aug. 2, 1884	2183	*Albatross*	1 ♂	8042	Half grown.
Do	39 58 35	71 00 30	197	gn. M	45	Sept. 21, 1883	2092	do	1 s. ♂	5379	
North Carolina: Off Cape Hatteras	35 14 20	74 59 10	142	bu. M	50.5	Nov. 9, 1883	2109	do	1 ♀	5693	
South Carolina:											
Off Cape Romain	32 36 00	77 29 15	258	gy. S. bk. Sp		Oct. 21, 1885	2624	do	1 ♂	11213	
Off Charleston	32 25 00	77 42 30	262	co. S	45.5	July 13, 1880	319	*Blake*	1 ♂	3174, M.C.Z.	Figured type of *Amathia agassizii*.
Southeast of Charleston	32 10 to 11	79 07 to 04	214	gn. M. S	°C 22.7	Dec. 9, 1919	20035	*Albatross*	3 ♂ 2 ovig. ♀	55442	In otter trawl. Large.
Georgia: East of Savannah	31 57 00	78 18 35	334	hrd	°F 45	July 12, 1880	317	*Blake*	1 y.	4922	Figured by Smith, Bull. M. C. Z., vol. 10, 1882, pl. 2, fig. 3.
Florida:											
Off Fernandina	30 53 00	79 42 30	273	gy. S. bk. Sp	48.7	May 5, 1886	2667	*Albatross*	2 ♂ 1 ♀	11397	
Do	30 47 30	79 49 00	270	gy. S	48.3	do	2666	do	3 y.	11383	
Off St. Augustine	29 47 00	80 05 45	263	fne. gy. S	45.2	May 4, 1886	2665	do	10 ♂ 7 ♀	11358	Mostly soft shell.
Off Carysfort	25 20 30	79 58 00	217	gy. S	42.6	Apr. 9, 1886	2642	do	3 ♂ 1 ♀	11392	Small.
Gulf Stream, off Cape Florida.	7¼ miles E. of Fowey Rocks Light.		185	gy. M	49	Mar. 30, 1903	7520	*Fish Hawk*	1 y. ♂	46981	
Do	6 miles E. of Fowey Rocks Light.		200	gy. M	48	Mar. 25, 1903	7514	do	2 ♂ 1 ♀ 8 y.	46789	
Do	6¼ miles E. SE. ½ E. of Fowey Rocks Light.		200	gy. M	46	do	7513	do	1 y. ♂	46980	
Florida	Sand Key Light bearing N. ½ W., about 6 miles.		[1] 105			June 20, 1893	33	Biol. Exped. State Univ. Iowa.	2 y. ♀	Mus. S.U.I.	
Do	American Shoal Light bearing N. by W. ½ W., about 10 miles.		105–110			June 27, 1893	52	do	1 ♂	do	

[1] About 105 fathoms

Material examined of Rochinia crassa—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°*F*						
Florida—Continued											
Florida	American Shoal Light bearing NE. by N., 8 miles.		70-80			June 29, 1893	62	Biol. Exped. State Univ. Iowa.	1 lge. ♂	18671	
Do	American Shoal Light, N. by E. ½ E., about 8 miles.		85-95			do	63	do	1 y. ♀	Mus. S.U.I.	
Pourtales Plateau	24 16 00	81 22 00	[2] 200			June 27, 1893	56	do	1 y. ♀	do	
South of Marquesas Keys.	24 15 00	82 13 00	229	sft. Co. Oz	49. 5	1877-78	5	*Blake*	1 ♂	2862, M.C.Z.	Holotype of *Amathia crassa*

[2] About 200 fathoms.

Material examined of Rochinia tanneri

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Lat. N.	Long. W.									
	° ′ ″	° ′ ″			°*F*						
Southeast of Massachusetts: Off Marthas Vineyard.	39 58 00	70 06 00	146	S. Sh	47	Sept. 21, 1881	1038	*Fish Hawk*	1 y	Y. U. M	Paratype.
Delaware: Off the Capes of Delaware.	38 39 00	73 11 00	130	S	49	Oct. 10, 1881	1043	do	1 ♂	18915	Holotype.
Florida:											
Gulf Stream, off Key West.	24 21 55	81 58 25	98	S	55	Feb. 14, 1902	7279	do	1 y. ♂	46982	
Do	24 17 05	81 58 25	132	S	52	do	7280	do	1 ♂ 1 immat. ♀	46773	
Off Key West	Sand Key Light bearing N. NW., about 5 miles.		[1] 90			June 21, 1893	35	Biol. Exped. State Univ. Iowa.	1 ♀	20017	
Off American Shoal	American Shoal Light bearing NE. by N., 8 miles.		70-80			June 29, 1893	62	do	1 ♂	Mus. S. U. I.	

[1] About 90 fathoms.

and diminishing rapidly in size from first to fourth; in specimens of medium size they surpass the chelipeds; merus with a short spine at distal extremity.

Measurements.—Male (18671), length of carapace to base of horns 95 mm., width of carapace 79.5 mm., length of cheliped extended about 39.4 cm. or 15½ inches; entire width of crab with chelipeds extended, about 83.6 cm. or 33 inches; length of merus of cheliped 17.5 cm.; length of propodus of cheliped on upper margin 16.2 cm.; length of same on lower margin 20.6 mm.

Range.—East coast of North America between 40° N. latitude and Florida Straits. Depth, 70 to 334 fathoms.

Material examined.—See table, pages 212-213.

ROCHINIA HYSTRIX (Stimpson)

Plates 70 and 71

Amathia hystrix Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 124 (type-locality, off Sand Key, Florida, lat. 24° 16′ 00″ N.; long. 81° 42′ 00″ W., 137 (corrected from 138) fathoms; type not extant).—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 134; 1879, p. 200, pl. 28, figs. 1–1 *b*; Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 2.

Anamathia hystrix Smith, Proc. U. S. Nat. Mus., vol. 7, 1884 (1885), p. 493; Rept. U. S. Commr. of Fish and Fisheries for 1885 (1886), p. 626.—Rathbun, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 61.—Faxon, Mem. Mus. Comp. Zoöl., vol. 18, 1895, p. 10.

Scyramathia hystrix Rathbun, Bull. U. S. Fish Comm., vol. 20 for 1900, pt. 2 (1901), p. 62.

Diagnosis.—Median spines 4; gastric spines 4; spines of rostrum and carapace long and slender; one spine on basal antennal article; a slender spine at angle of buccal cavity, and at extremity of merus of ambulatory legs.

Description.—Carapace covered with a short, dense, vesicular pubescence, and armed with 16 long, slender spines—2 rostral; 4 median, of which 2 are gastric, 1 cardiac and 1 intestinal; 1 gastric spine on either side of the median line; 1 marginal hepatic (paired); 3 branchial (paired) of which 1 is on the margin. The preocular spine is slender and much shorter than the other dorsal spines; postocular lobe slightly developed. Basal antennal article with a spine at the antero-external angle, while a longer spine is situated at the antero-external angle of the buccal cavity.

Chelipeds slender and weak, very little stouter than the ambulatory legs and shorter than the first two pairs; merus cylindrical and with a terminal spine; carpus with an external spine; manus slightly compressed, widening distally; fingers toothed throughout their length, very narrowly gaping. First ambulatory leg much the longest. All are very slender, and the merus terminates in a spine.

Material examined of Rochinia hystrix

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°F						
Gulf Stream, off Key West, Florida.	21 17 05	81 58 25	132	S.	52	Feb. 14, 1902	7280	*Fish Hawk*	1 ovig ♀	46702	
Do.	21 19 00	81 39 45	120	Co.	53.5	Feb. 26, 1902	7298	do.	1♂	46703	
Off Sand Key, Florida			128					W. Stimpson	1♂, small	2561, M.C.Z	Identified by W. Faxon.
Western Dry Rocks, Florida.			144					J. B. Henderson.	1♀	50510	
Off Havana, Cuba.	2½ miles NW. of Havana Light.		387	Co.	49	Apr. 30, 1884	2152	*Albatross*	1y. ♀	6940	
					°C						
Do.	23 09 30	82 11 30	242			1877–78	58	*Blake*	1	2692, M.C.Z.	
Mayaguez Harbor, Porto Rico.	Customhouse, E. ⅝ S., 9 miles.		220 225	rky.	24.6	Jan. 21, 1899	6070	*Fish Hawk*	1♀	21415	
					°F						
Off Martinique	14 25 15	60 54 50	213	hrd.	50.5	Feb. 11, 1879	208	*Blake*	1	2859, M.C.Z.	
Off St. Lucia	13 19 12	61 01 10	161	gy. S.	56	Feb. 15, 1879	218	do.	3	2628, 2860, M. C. Z.	
Off St. Vincent	13 07 55	61 05 36	124	Co.	57.5	Mar. 3, 1879	269	do.	2	2858, 4473, M. C. Z.	
Do.	13 06 45	61 06 55	87	Co.	62	Feb. 21, 1879	232	do.	1	2735, M.C.Z.	
Off Barbados	13 14 18	59 41 12	180	hrd.	50.75	Mar. 9, 1879	295	do.	1	2608, M.C.Z.	
Do.	13 12 00	59 41 00	210	crs. S.	49.75	do.	291	do.	3	2620, 3040, 4475, M. C. Z.	
Do.	13 06 30	59 39 20	82		60	Mar. 10, 1879	300	do.	1♂	4476, M.C.Z.	
Do.	12 57 40	59 36 50	221	S.	50.5	Mar. 6, 1879	280	do.	2	2861, 4474, M. C. Z.	

Measurements.—Male (46703), length of carapace to base of horns 21.9, length including horns 41.5, width of carapace excluding spines 15.4, including spines 33.2, length of cheliped 44 mm.

Range.—Florida Straits and Caribbean Sea as far as St. Vincent and Barbados. Depth, 88 to 387 fathoms.

Material examined.—See table, page 215.

ROCHINIA TANNERI (Smith)

Plate 227, fig. 1

?*Amathia modesta* Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 124 (type-locality, off Sand Key, Florida, 120 fathoms; type not extant).

Amathia tanneri Smith, Proc. U. S. Nat. Mus., vol. 6, 1883, p. 4 (type-locality, off Delaware Bay, 130 fathoms; holotype, Cat. No. 18915, U. S. N. M.).

?*Anamathia modesta* Smith, Proc. U. S. Nat. Mus., vol. 7, 1884 (1885), p. 493.

Anamathia tanneri Smith, Proc. U. S. Nat. Mus., vol. 7, 1884 (1885), p. 493; Rept. U. S. Commr. of Fish and Fisheries for 1885 (1886), p. 626 [22], pl. 1, fig. 4.—Rathbun, Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 254.

Diagnosis.—Median spines 4; gastric spines 4; spines of carapace short and stout, of rostrum long; one spine on basal antennal article; a blunt tooth at angle of buccal cavity; a short spine at extremity of merus of first ambulatory leg, a tooth on the other legs.

Description.—Spines of carapace of the same number as in *hystrix* but much shorter, especially the lateral gastric spines which in small specimens are reduced to tubercles. Orbit less open than in *hystrix*, the supraocular eave projecting further over the eye; preocular spine present. Basal antennal article with an antero-external spine. Anterior angles of buccal cavity prominent with a broad triangular tooth, followed by 3 or 4 blunt, conical projections on the pterygostomian region.

Chelipeds very little stouter than ambulatory legs and similar to those of small specimens of *R. crassa.* The merus of the ambulatory legs terminates in a tuberculiform protuberance except in the first leg where it is produced in a short spine.

Measurements.—Male, station 62, S. U. I. Exped., length of carapace from posterior margin to base of horns 21.6, total length of carapace including spines 35.2, width of carapace excluding spines 15, including spines 23.1 mm.

Range.—Off Marthas Vineyard, Massachusetts, to Straits of Florida. Depth, 70 to 146 fathoms.

Material examined.—See table, page 213.

Remarks.—It seems very probable that the type of *Amathia modesta* was a specimen of *R. tanneri* with the lateral gastric spines suppressed. If this could be proved, the name *modesta* would take precedence of *tanneri.*

ROCHINIA CORNUTA (Rathbun)

Plate 227, fig. 2

Anamathia cornuta Rathbun, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 571, pl. 41, fig. 2 (type-locality, northeast of Indefatigable Island, Galapagos Islands, 392 fathoms; holotype, Cat. No. 21572, U.S.N.M.).

Scyramathia cornuta Rathbun, Mem. Mus. Comp. Zoöl., vol. 35, 1907, p. 73.

Diagnosis.—Median tubercles 3; gastric tubercles 3; dorsal protuberances 9, short, conical; rostrum longer than remainder of carapace; 2 long marginal spines (paired).

Description.—Surface closely covered with tuberculiform, cutaneous vesicles, among which are a few curved hairs. Tubercles and spines of carapace as follows: Gastric region with 3 tubercles or short spines, the lateral ones in advance of the median; cardiac and intestinal regions each with one, short and conical; branchial region with 2, short, the posterior one the smaller and nearer the median line; hepatic and branchial regions each with a long, slender, marginal spine directed outward, upward and forward. Rostral horns very long, slender, nearly equaling or exceeding half the entire length of the carapace, and extending nearly to base of rostrum, widely divergent, slightly arched. Supraocular eave well developed, preocular spine slender, not reaching line of base of rostral horns. Basal article of antenna with a short tooth or spine at antero-lateral angle. Pterygostomian ridge with three or four tubercles. A broadly rounded lamina at angle of buccal cavity.

Chelipeds slender. Merus triangulate; outer face with a low blunt ridge; upper margin with a sharp terminal spine, and a broad subacute tooth near proximal end. Carpus with a superior uneven crest, a tubercle on outer surface near distal end. Propodus compressed, upper edge thin; dactylus more than half superior length of propodus. Fingers with narrow gape along their basal third, prehensile edges crenate. Merus of ambulatory legs with a short spine which decreases in size and acuteness from first to fourth pair, where it is a blunt lobiform prominence.

Measurements.—Ovigerous female, type, length from posterior margin to tip of horns 50.2, length from base of horns 25, length of horns 26.5, width exclusive of spines 20.2, length of branchial spine 9 mm.

Range.—Off the Galapagos Islands, 392 to 633 fathoms.

Material examined.—Northeast of Indefatigable Island; lat. 00° 29′ 00″ S.; long. 89° 54′ 30″ W.; 392 fathoms; wh. bk. S.; 43.9° F.; April 15, 1888; station 2818, *Albatross;* 5 males, 2 females (1 ovigerous, holotype) (21572).

Off Hood Island; lat. 1° 35′ 00″ S.; long. 89° 30′ 00″ W.; 633 fathoms; lt. gy. glob. Oz.; temp. 39.5° F.; November 7, 1904; station 4641, *Albatross;* 1 male (33395).

ROCHINIA GRACILIPES A. Milne Edwards

Plate 229, figs. 1–4

Rochinia gracilipes A. Milne Edwards, Crust. Rég. Mex., 1875, p. 86, footnote (type-locality, Cape Corrientes, Argentina; holotype in Paris Mus.).

Rachinia gracilipes A. Milne Edwards, Crust. Rég. Mex., 1875, pl. 18, figs. 1–1*d*.—Lagerberg, Schwed. Sudpolar Exped. 1901–1903, vol. 5, Lief. 7, Anom. u. Brach., 1905, p. 22.

Diagnosis.—Median tubercles 3; gastric tubercles 3; dorsal protuberances 9; rostrum less than half as long as remainder of carapace; 2 short marginal spines (paired).

Description.—The median protuberances are bluntly rounded, the gastric and cardiac larger than the intestinal. The lateral gastric tubercles are acute. The branchial tubercle either side of the cardiac tubercle is very small. The hepatic and branchial marginal spines are short and conical; between them and only a little higher up on the carapace is a similar but shorter, branchial spine. A short preocular spine or tooth and a similar postocular one. Rostrum of moderate length, slightly deflexed, the outer margins of the horns little divergent. A small tooth at antero-lateral angle of basal article of antenna; a tubercle just outside the base of the article and 2 or 3 tubercles in a row on the pterygostomian region. Angles of buccal cavity rounded, margin thickened. A slight notch visible at inner angle of merus of maxillipeds.

Chelipeds stout; palm broad, less than twice as long as greatest width; fingers not quite meeting at base when closed.

Measurements.—Male, holotype, total length of carapace 23.5, width 16.2 mm. (A. Milne Edwards). The specimens collected by the *Hassler* are smaller.

Range.—From Cape Frio, Brazil, to Cape Horn. Depth, 30 to 55 fathoms.

Material examined.—See table, page 219.

Additional localities recorded.—

Cape Corrientes, Argentina (male, figured type, A. Milne Edwards); 100 meters (Lagerberg).

East Patagonian Bank; lat. 44° S.; 90 meters (Doflein and Balss).

South of Cape Horn; lat. 56° 20′ S., long. 67° 42′ W.; 44 fathoms; *Hassler* (A. Milne Edwards).

Remarks.—In the number and arrangement of prominences on the carapace, this species agrees with *R. cornuta*, but the rostral and lateral marginal spines in the latter are much longer, the anterior branchial spine much higher up and the chelipeds slenderer.

Material examined of Rochinia gracilipes

Locality	Lat. S.	Long. W.	Fathoms	Date	Station	Collector	Specimens	Cat. No.
	° ′ ″	° ′ ″						
Brazil: Off Cape Frio			35	Jan. 22, 1872	20	*Hassler*	1♂ 1♀ 3 y.	2056, M. C. Z.
Argentina: Off Rio de la Plata	37 42 00	56 20 00	44	Mar. 1, 1872	26	do	3♀ (1 ovig.)	1949, M. C. Z.
Patagonia:								
Off mouth of Rio Colorado	40 22 00	60 35 00	30	Mar. 3, 1872	27	do	4♂ 4♀ 1♂ 1♀	1951, M. C. Z. 55118.
Off Gulf of San Matias	41 40 00	63 13 00	30	Mar. 7, 1872	30	do	1♂ 1♀ 2 y.	1950, M. C. Z.

Material examined of Rochinia umbonata.

Locality	Lat. N.	Long. W.	Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.
	° ′ ″	° ′ ″			°*F*					
Georgia	30 44 00	79 26 00	440	Co. crs. S. Sh. For.	45.6	Apr. 1, 1885	2415	*Albatross*	1♂ 2♀	9851
Florida:										
Off Fernandina	30 58 30	79 38 30	294	gy. S. dead Co.	46.3	May 5, 1886	2668	do	2♂ 1♀	11377
Gulf Stream, off Key West	24 18 00	81 47 45	133	S.	53.5	Feb. 19, 1902	7286	*Fish Hawk*	1 ovig. ♀	46774
Do.	24 17 30	81 53 30	127	S. Gr.	53	do	7283	do	1 y. ♀	46983
Off St. Vincent	13 06 45	61 06 55	88	Co.	62	Feb. 21, 1879	232	*Blake*	1♂	6316, M.C Z.

KOCHINIA OCCIDENTALIS (Faxon)

Plate 228; plate 229, fig. 5.

Anamathia occidentalis Faxon, Bull. Mus. Comp. Zoöl., vol. 24, 1893, p. 150 (type-locality, near the Galapagos Islands, 385 fathoms, holotype, Cat. No. 4479, M. C. Z.); Mem. Mus. Comp. Zoöl., vol. 18, 1895, p. 8, pl. 1, figs. 2 and 2*a*.

Diagnosis.—Median spines and tubercles 4; gastric spines and tubercles 4; 14 dorsal spines and tubercles; marginal spines and rostral horns of moderate length; a small spine or tooth on basal antennal article; none at buccal angle; a tubercle at end of merus of all legs.

Description.—Carapace strongly arched, clothed with tuberculiform, cutaneous vesicles and with delicate setae hooked at their tips; and furnished with spines and tubercles arranged as follows: Four on the gastric region (two in the median line, two lateral), the posterior of the median ones having the form of a tubercle, from which a low blunt keel runs back to the cardiac region; one on the cardiac region, one (tubercle) on the intestinal region, one (a marginal spine) on each hepatic region, five on each branchial region. Of the branchial spines the one at the widest part projects upward and forward, and is the longest spine of the carapace, one-half as long as the rostral horns. There are four or five small tubercles on the outer border of the pterygostomian region. Rostrum more than one-fourth the length of the carapace and with 2 slightly divergent awl-shaped horns. Preocular spine well-developed and acute. Basal antennal article with a short, blunt spine or tubercle at its antero-external angle. Buccal area with its antero-external angle projecting but not dentiform.

Chelipeds of male twice as long as carapace, not much more robust than the ambulatory legs; propodus little longer than the merus, subcylindrical, widening toward the fingers. Fingers less than half the basal portion; prehensile edges regularly dentate, closing throughout their length. Merus of ambulatory legs with a small tubercular projection at the distal end above, most prominent in the anterior pair.

Measurements.—Male holotype, length of carapace without rostral horns 45, length of rostral horns 12, width of carapace 38, length of longest branchial spine 7 mm.

Range.—Galapagos Islands. Known only from type-specimen.

Material examined.—Off the Galapagos Islands; lat. 1° 03′ 00″ S.; long. 89° 28′ 00″ W.; 385 fathoms; R.; temp. 43.2° F.; March 28, 1891; station 3404; 1 male, holotype (4404, M. C. Z.).

ROCHINIA VESICULARIS (Rathbun)

Plate 230

Scyramathia vesicularis Rathbun, Mem. Mus. Comp. Zoöl., vol. 35, 1907, p. 73, pl. 5, fig. 7; pl. 8, figs. 1 and 1*a* (type-locality, SE. of Hood Island, Galapagos Islands, 300 fathoms; (holotype, Cat. No. 32860, U.S.N.M.).

Diagnosis.—Median spines 4; gastric spines 4; dorsal and marginal spines short and numerous; 2 spines on basal antennal article; a spine on lower margin of orbit outside the antennal article; none at buccal angle; a spine or sharp tooth at end of merus of all legs.

Description.—Body and legs everywhere covered with a pubescence formed of spherical vesicles; a few long, slender hairs on the gastric region, the lateral margins and the rostrum. Carapace behind the orbits armed with 20 short, stout, sharp-pointed spines, of which 4 are gastric (2 median, the lateral spines on either side of the anterior median), 1 cardiac, 1 intestinal, 1 hepatic, marginal (paired), 6 branchial (paired), of which one is suberect above the lateral angle, one is almost in line with the latter and the cardiac spine, 2 others, more anterior, form a straight line with the cardiac spine, while 2, smallest are above the bases of the second and third legs. Preocular spine similar to the others; postocular cup narrow, curved inward, spine-tipped. Rostrum composed of 2 slender, moderately divergent horns, two-fifths the length of the remainder of the carapace. Basal antennal article armed with two spines on its outer margin; immediately behind the posterior of these is another spine on the orbital margin.

Chelipeds of small male just as long as carapace and rostrum and a little stouter than the legs; arm with a row of four short spines above, which increase toward the wrist; wrist with 3 or 4 similar spines; palm with sides parallel, one and one-half times as long as fingers, which meet when closed, edges crenulate. Merus of ambulatory legs with a spine or sharp tooth at distal end; first pair one and one-half times as long as carapace and rostrum.

In the female the rostrum is shorter, one-third the length of remainder of carapace; the cheliped equals length of carapace and half the rostrum; fingers relatively longer than in the male; first ambulatory one and one-fifth times as long as carapace and rostrum.

Measurements.—Male holotype, total length of carapace 20.7, width 11.5, length of rostral horns 6 mm.

Range.—Off the Galapagos Islands; 300 fathoms.

Material examined.—Southeast of Hood Island, Galapagos Islands; lat. 1° 30′ 30″ S.; long. 89° 35′ 00″ W.; 300 fathoms; brk. Sh. Glob.; temp. 48.6° F.; November 7, 1904; station 4642, *Albatross;* 1 male, holotype, 2 females (32860).

ROCHINIA UMBONATA (Stimpson)

Plate 72; plate 73, fig. 1

Scyra umbonata Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 115 (type-locality, off Sand Key, Florida, 143 fathoms; type not extant).—A. Milne Edwards, Crust. Rég. Mex., 1875, p. 87; 1880, pl. 31-A, figs. 5–5*b*; Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 2.

Scyramathia umbonata A. Milne Edwards, Comptes Rendus Acad. Sci., Paris, vol. 91, 1880, p. 356. (See Sars, Norske Nordhavs Exped., vol. 14, Crustacea, pt. 1, 1885, pp. 6, 7 and 274; also Smith, Rept. U. S. Commr. of Fish and Fisheries for 1885 (1886), p. 625 [21]).

Anamathia umbonata Rathbun, Proc. U. S. Nat. Mus., vol. 17,1894, p. 61, pl. 1, figs. 1–3.—Faxon, Mem. Mus. Comp. Zoöl., vol. 18, 1895, p. 10.

Diagnosis.—Median tubercles four; gastric tubercles four; dorsal tubercles mostly large and flat-topped. No spine on basal antennal article or at buccal angle. A tubercle at end of merus of ambulatory legs.

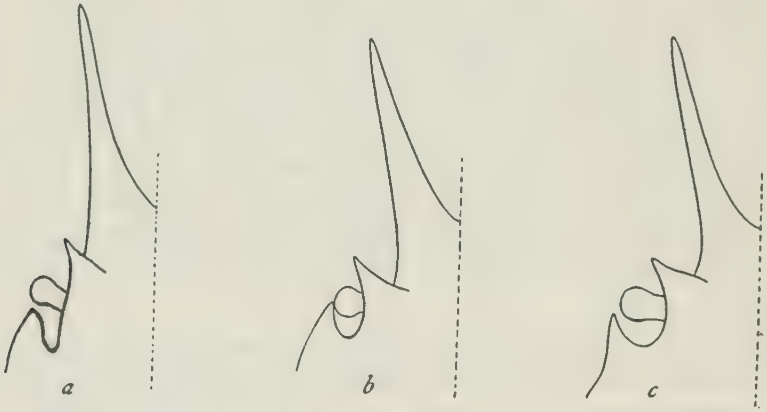


Fig. 85.—Rochinia umbonata (11377), front and orbit, after Rathbun. *a*. Male, total length of carapace 26.5 mm. *b*, Male, total length of carapace 28 mm. *c*. Ovigerous female, total length of carapace, 31 mm.

Description.—Surface covered with a close tuberculiform pubescence with longer club-shaped setae on the margins of the legs and slender curved setae on the rostrum and gastric region and outer margin of branchial region. Carapace with nine tubercles on the dorsal surface, of which six are usually large, flattened and irregular in shape, and are situated on the posterior gastric, the cardiac, and two on each branchial region, the anterior of which is the larger; the three smaller tubercles are gastric, one anterior median, the others lateral. An hepatic and a branchial marginal spine, which may be either triangular, flattened and somewhat appressed, or conical and projecting outward. There is a small tubercle on the middle of the posterior margin, or of a raised ridge parallel to the posterior margin. Orbits variable, either narrow with the supraocular eave somewhat convex in outline and the preocular spines directed forward and subparallel to each other, or wider, with the eave wholly concave and the spines directed obliquely outward. Rostral horns varying from 0.21 to 0.4 of the length of remainder of carapace. Basal antennal article unarmed or with a very low and inconspicuous tooth at anterior angle. Angles of buccal cavity projecting, lobiform. Subbranchial and pterygostomian regions tuberculate.

Chelipeds in male slightly enlarged, nearly as long as first ambulatory leg; merus somewhat angled, upper margin tuberculate proximally and with a distal spine. Carpus uneven; inner margin with a thin lobe near the merus. Manus compressed, narrow, margins thin. Dactylus about ⅔ the length of upper margin of manus, a large tooth at base in the hiatus. Prehensile edges of both fingers denticulate. Ambulatory legs of moderate length, with a tubercle at distal extremity of merus, or in the first pair a short spine.

Extremely variable, variations independent of sex.

Measurements.—Ovigerous female (11377), length of carapace on median line 24.4, length of horn 7, width of carapace exclusive of spines 18 mm.

Range.—Off Georgia to St. Vincent, West Indies. Depth, 88 to 440 fathoms.

Material examined.—See table, page 219.

Genus LIBIDOCLAEA Milne Edwards and Lucas

Libidoclaea Milne Edwards and Lucas, d'Orbigny's Voy. l'Amér. Mérid., vol. 6, pt. 1, Crust., 1843, p. 6; type, *L. granaria* Milne Edwards and Lucas.

Carapace broadly pyriform, swollen above; branchial regions much enlarged; gastric region prominent; genital region small, triangular, its posterior part encroached upon by the branchial regions which at this point are separated from each other only by a deep depression; cardiac and intestinal regions very oblique. Surface rough with fine granulations, sharp tubercles and spines. Rostrum long, extremity bifid. Orbits deeply cut above and below; a strong preocular spine above; eyes short, stout and retractile; basal article of antennae of moderate width, with two spines or teeth on outer margin. Buccal cavity closed by outer maxillipeds. Anterior portion of sternal plastron very oblique; abdominal segments distinct in both sexes. Chelipeds elongate; not surpassing the next pair of legs; fingers long, slender, and denticulate on inner border. Ambulatory legs slender, diminishing successively in length; dactyli long, slender, and slightly curved.

Southern part of South America.

KEY TO THE SPECIES OF THE GENUS LIBIDOCLAEA

A¹. Rostrum less than one-third as long as remainder of carapace and bifurcate for less than half its length………………………**granaria**, p. 224.

A². Rostrum more than one-third as long as remainder of carapace (intestinal spine excluded) and bifurcate for half its length……………**smithii**, p. 226.

LIBIDOCLAEA GRANARIA Milne Edwards and Lucas

Plates 76–78; plate 231, figs. 1, 2, 4, 5 and 6

Libidoclaea granaria Milne Edwards and Lucas, d'Orbigny's Voy. l'Amér. Mérid., vol. 6, pt. 1, Crust., 1843, p. 8; atlas, vol. 9, 1847, pl. 3, pl. 4, figs. 1–1*b* (type-locality, environs of Valparaiso; type in Paris Mus.).—Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 72.

Libidoclea coccinea Dana, Amer. Journ. Sci., ser. 2, vol. 11, 1851, p. 268 (type-locality, in deep water off eastern Patagonia; type not extant); U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 88; atlas, 1855, pl. 1, figs. 3*a*–3*d*.

Libinia coccinea Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 73.—Rathbun, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 574.

Libinia gracilipes Miers, *Challenger* Rept., Zool., vol. 17, 1886, pp. 73 and 74, pl. 9, figs. 2–2*c* (type-locality, off coast of Chiloe, 45 fathoms; type in Brit. Mus.).

Diagnosis.—Rostrum bifurcate for less than half its length. Spines of carapace moderate, spine at lateral angle less than half as long as width of branchial region except in young (16 mm. long and under), where it is just half as long as width of branchial region.

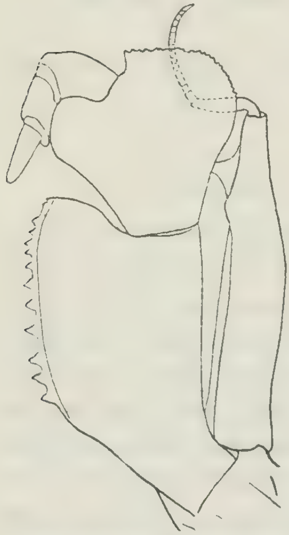


Fig. 86.—Libidoclaea granaria (21919), maxilliped, × 7.5

Description.—Spines and tubercles of carapace very unequal; the principal spines are proportionally much longer in the young than in the old. Gastric tubercles 7, 3 median, the middle one of which may almost disappear, and 2 on each side in a longitudinal line; a long cardiac spine, a longer intestinal spine, a still longer spine on the lateral margin at the widest part of the carapace and opposite the narrow anterior border of the cardiac region. Hepatic margin produced in a spine. A curved line of tubercles follows the innermost margin of the branchial region; among the larger tubercles of this region a triangle of 3 near the gastric region is prominent; while a still larger spine lies above the postero-lateral margin and in a line with the cardiac spine; from it a row of spines curves downward and then forward and is continued on the subbranchial and the pterygostomian regions, ending in a flat triangular spine at the angle of the buccal cavity.

Rostrum inclined downward; horns short, moderately spreading. Supraocular eave narrow, armed with a sharp, ascending spine, and divided from the postocular cup by a narrow fissure; this cup in lateral view shows a rounded lobe. This in turn is separated by a broad, curved sinus from the basal segment of the antennae. The segment is anteriorly narrowed and its outer margin is occupied by two stout curved spines. Behind the orbital sinus there is a well-developed tubercle.

The merus of the outer maxillipeds is a little longer than wide, its antero-external angle is broadly rounded.[32]

The chelipeds and legs are very long, the chelipeds not so long as the first pair of ambulatory legs even in the fully developed male, where they are stouter than the legs. Their surface is rough with fine sharp granules which, if invisible to the naked eye, are evident to the touch when the appendage is rubbed from the distal end toward the carapace. Palms of old male compressed, a little narrower at proximal end than elsewhere; fingers about two-thirds as long as upper margin of palm, gaping at base and armed with low teeth on their prehensile edges. A smooth longitudinal depression on the upper surface of the carpus of the ambulatory legs.

Measurements.—Male (Milne Edwards and Lucas), length of carapace 67, width 56 mm. Male (Dana), length 2⅜ inches (60.4 mm.), width without spines 2⅛ inches (54 mm.). Male (Miers), length and width about 36 mm. Immature male (21919), length of carapace from posterior margin to tip of horns 36.2, width with spines 38, without spines 30 mm. Male (1870, M. C. Z.), length of carapace from posterior margin to tip of horns 90.5, extreme width 86.2, length of cheliped, approximately 235, length of propodus of cheliped on lower margin about 116, length of same on upper margin 74.2, length of dactylus of cheliped about 47 mm.

Color.—Carapace yellowish white, ambulatory legs of same color but much darker (Milne Edwards and Lucas). Scarlet (Dana). Yellowish-brown, in spirit (Miers).

Range.—From Valparaiso, Chile, to off Gulf of San Matias, Patagonia; 30 to 52 fathoms.

Material examined.—

Porto San Pedro, Island of Chiloe, Chile: U. S. C. S. S. *Hassler;* 1 old male encrusted with *Balanus* (1870, M. C. Z.).

Off Gulf of San Matias, Patagonia; lat. 40° 03′ 00″ S.; long. 58° 56′ 00″ W.; 52 fathoms; fne. dk. S.; January 13, 1888; station 2767, *Albatross;* 200 specimens of medium and small size (21919); the male measured above is the largest specimen of this lot.

Other records.—

Near Valparaiso (Milne Edwards and Lucas).

Off Cape Tres Montes, Chile; lat. 46° 53′ 15″ S.; long. 75° 12′ 00″ W.; 45 fathoms; station 304, *Challenger* (Miers).

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[32] This is contrary to the form of the merus given in the atlas of d'Orbigny's "Voyage," pl. 4, fig. 1 *b*, where the merus has a prominent tooth at the antero-external angle. I am disposed to believe that the artist may have included the angle of the buccal cavity with the merus. This view is substantiated by the correspondence in all essentials of the figures of the other parts as represented by the three authors above cited. Compare pl. 4, fig. 1 *a* of M. Edwards and Lucas with pl. 1, fig. 3 *c* of Dana and pl. 9, fig. 2 *b* of Miers; also pl. 3 of M. Edwards and Lucas with pl. 1, fig. 3 *a* of Dana and pl. 9, fig. 2 of Miers.

Off eastern coast of Patagonia; 30 fathoms (Dana).

Age variation.—A male collected by the *Hassler* is larger than any previously recorded. The dorsal spines of the carapace are reduced to tubercles, even those of the margin are very short and conical. The rostrum is much wider at base than its length and does not widen at the tip as in the young; horns very short; length of rostrum 9.6, width at base 11.4, width at tips 2.7 mm. The inner margins of the orbits converge anteriorly, the interspace narrowing from 17.6 to 14.8 mm. The width of the body, exclusive of spines, in relation to its total length, is greater than in smaller specimens.

LIBIDOCLAEA SMITHII (Miers)

Plates 74 and 75; plate 231, fig. 3

Libinia smithii Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 73, pl. 9, figs. 1–1c (♂) (type-locality, off coast of Chile, lat. 52° 45′ 30″ S., long. 73° 46′ 00″ W., 245 fathoms; type in Brit. Mus.).

Libinia hahni A. Milne Edwards, Miss. Sci. Cape Horn, vol. 6, 1891, Crust., p. 5, pl. 1 (♀) (type-localities, Beagle Channel, in sight of Loupataya, 198 meters or 108 fathoms and near Murray Narrows, 280 meters or 153 fathoms; type in Paris Mus.).

Diagnosis.—Rostrum bifurcate for half its length. Some spines of carapace long, spine at lateral angle about as long as width of branchial region.

Description.—Differs from *L. granaria* in the greater length of the rostrum and of certain spines of the carapace. The rostrum in the largest male is nearly half as long as the postrostral portion of the carapace not counting the posterior spine, the horns occupy half the length of the rostrum and diverge widely. The spine at the lateral angle of the carapace is the longest and equals in length the width of the branchial region. Other elongate spines are four median spines, namely, the intestinal, cardiac, anterior, and posterior gastric; the hepatic spine; two branchial spines (paired); preocular spine (paired). The tubercles of the carapace are fewer and lower than in *granaria* of similar size. In the females examined the rostral horns are less divergent than in the male, but the long spines of the carapace are very little if any shorter than in the male. In the young only six spines are noticeably longer than in *granaria* of the same size, viz, the two rostral, cardiac, intestinal and lateral branchial (paired).

Measurements.—Male (21922), length of carapace from posterior margin to tip of horn 43, width including spines 52.1, width excluding spines 29.6 mm. Ovigerous female (21920), length from posterior margin to tip of horn 51.8, width excluding spines 38.6 mm.

Color.—In spirit, light yellowish brown (Miers).

Range.—From Calbuco, Chile (Lenz) to Straits of Magellan; depth, 10 to 15 (Lenz) and 61 to 1,050 fathoms.

Material examined.—See table, page 227.

Material examined of Libidoclaea smithii

Locality	Lat. S.	Long. W.	Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.
	° ′ ″	° ′ ″			°*F*					
Patagonia:										
Off Chonos Archipelago	45 35 00	75 55 00	1,050	gn. M	36.9	Feb. 11, 1888	2788	*Albatross*	1 y. ♂	21924
Off Port Otway	46 47 30	75 15 00	61	gn. M	53.9	Feb. 9, 1888	2787	do	4♂ 6♀ 10 y	21923
Between Wellington Island and mainland	48 41 00	74 24 00	194	bu. M	51.9	Feb. 8, 1888	2784	do	1♂ 2♀	21922
Off Esperanza Island	51 02 30	74 08 30	122	bu. M	47.9	Feb. 6, 1888	2783	do	1 y. ♀	21921
Straits of Magellan	53 01 00	73 42 30	369	gn. M	46.9	Feb. 2, 1888	2780	do	1 y. ♂ 1♀	21920

Material examined of Trachymaia cornuta

Locality	Lat. N.	Long. W.	Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	° ′ ″	° ′ ″			°*F*						
Little Bahama Bank	27 22 00	78 07 30	338	gy. S	47.5	May 2, 1886	2655	*Albatross*	1♂	11400	
St. Croix	17 37 15	64 48 20	248	Co. S. brk. Sh.	54.5	Jan. 5, 1879	134	*Blake*	1	2706, M.C.Z.	
Off Barbados	13 12 00	59 41 00	210	crs. S	49.75	Mar. 9, 1879	291	do	4	2723, 2863, 4470, M.C.Z.	
Do	13 05 00	59 39 40	140	Co. brk. Sh.	56.5	Mar. 10, 1879	299	do	2	2763, M.C.Z.	Cotypes.

Genus OPLOPISA A. Milne Edwards

Oplopisa A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 201; type, *O. spinipes* A. Milne Edwards.

Near *Pisa* Leach,[33] but differs in the form of the maxillipeds and of the buccal cavity; the merus of the outer maxillipeds is much dilated at its antero-external angle while truncate on the inner side; the buccal cavity, instead of a straight anterior margin, is much more advanced on the sides than in the middle portion. Carapace pyriform, with two rostral horns and inner orbital angles spiniform. Orbit incompletely closed below, the low border being separated from the basal article of the antenna by a deep, wide cut; this article is narrow, the movable part of the antenna is exposed in dorsal view. Antennular fossettes large. (After A. Milne Edwards.)

Known only from the type species.

OPLOPISA SPINIPES A. Milne Edwards

Plate 232, figs. 1 and 2

Oplopisa spinipes A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 201, p. 15 A, figs. 5–5*b* (type-locality, in explanation of plate, Strait of Florida, 101 fathoms; type in Paris Mus.).—A. MILNE EDWARDS and BOUVIER, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 11, fig. 8.

Diagnosis.—Orbital margin unarmed except for the preorbital and the postorbital spine. Carapace rough with spines and granules. Antennae, buccal area, chelipeds and legs similar to *Mithrax.*

Description.—Carapace thick, swollen, slightly hairy, regions little marked. Four tubercles surmount the gastric region; three of them are situated in advance in a transverse row, the fourth is behind. Some tubercles on the cardiac, branchial and hepatic regions; between the tubercles the surface is covered with fine granulations. Rostrum narrow, formed of two straight, divergent horns; it is about one-third as long as the rest of the carapace. Postorbital angle wide, triangular and pointed. Basal article of outer antennae armed on its lateral margin with two spines, the anterior of which is the most developed. Chelipeds of female very feeble, furnished on the merus and carpus with short, obtuse spines. Ambulatory legs not very long, covered with regularly disposed spines. (After A. Milne Edwards.)

Measurements.—Length of carapace including rostrum 12.5, excluding rostrum 9, width of carapace 7 mm. (A. M. E.).

Locality.—Known only from the type-locality, Strait of Florida, 101 fathoms.

Remarks.—The figures of this species suggest strongly the young of a *Mithrax*, but the want of spines on the upper and lower margins of the orbit forbids its inclusion in that genus.

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[33] Edin. Encyc., vol. 7, 1814, p. 431.

Genus TRACHYMAIA A. Milne Edwards

Trachymaia A. Milne Edwards, Crust. Rég. Mex., 1880, p. 351; Bull. Mus. Comp. Zoöl., vol. 8, Dec. 29, 1880, p. 3; type, *T. cornuta* A. Milne Edwards.

Carapace broad, much swollen posteriorly, spinous. Rostrum short, deeply bifurcate. A small preocular spine, a large postocular spine, an infero-orbital spine. Eyes large, flattened almost horizontally. Basal antennal article long and narrow; next article inserted on either side of rostrum. Merus of outer maxillipeds with antero-external angle much dilated, antero-internal angle oblique, not notched. Chelipeds elongate, chelae much enlarged. Legs very slender, first one longer than cheliped, remainder diminishing rapidly in length; dactyli long, styliform, unarmed.

Contains but one species.

TRACHYMAIA CORNUTA A. Milne Edwards

Plate 80; plate 232, figs. 3–5

Trachymaia cornuta A. Milne Edwards, Crust. Rég. Mex., 1880, p. 352 (type-locality, off Barbados, 82 and 140 fathoms; cotypes, Cat. No. 2763, M. C. Z.); Bull. Mus. Comp. Zoöl., vol. 8, Dec. 29, 1880, p. 3.—Rathbun, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 63.

Tachymaia cornuta A. Milne Edwards, Crust. Rég. Mex., 1880, pl. 31 A, figs. 2–2c.

Diagnosis.—Carapace broad, spines delicate; eyes large and flat; chelipeds long and massive; ambulatory legs filiform. Merus of outer maxillipeds not notched at antero-internal angle.

Description.—Carapace rough with spinules and covered with soft bristles; spines arranged as follows: Four on gastric region forming a transverse diamond; 2 median cardiac, close together; 5 branchial, three near inner margin, 2 near outer; 1 hepatic and 1 subhepatic spine; on posterior margin a line of 25 small spines terminating above first leg; of this row the median spine and 2 near the middle are larger than the others; on the margin of the branchial region there is a line of 4 spines extending forward from above first leg; a cluster of 4 spines on pterygostomian region; rostral spines long, slender, divergent; preorbital spine acuminate; postorbital projecting laterally much beyond eye. Eyes large, flattened almost horizontally. A large suborbital spine and a spine at angle of buccal cavity. Basal antennal article bears a terminal and one lateral spine; second movable article reaches half way to end of rostral spines, remaining portion exceeds rostrum by half its length. In male abdomen, first segment

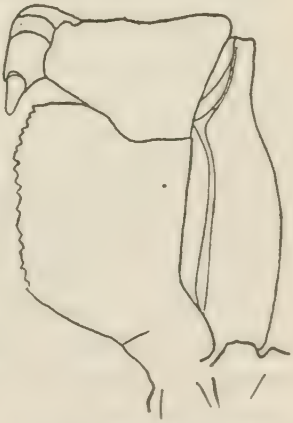
Fig. 87.—Trachymaia cornuta (11400), maxilliped, × 11.6

has three spinules transversely arranged; second has two median and one lateral; third and fourth have a median tubercle; sternum with four spinules in front of abdomen.

Chelipeds nearly twice length of carapace; ischium, merus and carpus spiny; hand broad, upper margin spinulous; lower margin with a tooth near articulation; fingers flattened laterally, broad, prehensile edges dentate, acute, narrowly gaping for half their length. Legs slender, first nearly three times length of carapace, fourth about one-half length of first.

Measurements.—Male (11400), median length of carapace 14.5, length including horns (tips broken off) 15.7, width without spines 13 mm.

Range.—Little Bahama Bank; St. Thomas; St. Croix; Nevis; Barbados. Depth, 82 to 338 fathoms.

Material examined.—See table, page 227.

Genus LEUROCYCLUS Rathbun

Salacia Milne Edwards and Lucas, d'Orbigny's Voy. l'Amér. Mérid., vol. 6, pt. 1, Crust., 1843, p. 12; type, *S. tuberculosa* Milne Edwards and Lucas. *Salacia* preoccupied by Lamouroux, Hist. Pol. Coral. Flex., 1816, p. 212.

Leurocyclus Rathbun, Proc. Biol. Soc. Washington, vol. 11, 1897, p. 164 (substituted for *Salacia*).

Carapace broader than long, suborbicular, depressed, regions well marked. Rostrum very small, subtriangular. Orbits directed forward; postocular cup large, separated from the scarcely projecting inner margin of the orbit by a triangular sinus. Basal segment of antenna very wide, wider than the space between it and the postocular tooth, and having a blunt tooth at the antero-external angle; the movable portion is entirely visible in dorsal view beside the rostrum. Epistome rudimentary. Ischium of outer maxillipeds broad, inner margin denticulate; merus cordiform. Chelipeds short; palm much swollen; fingers long, slightly curved, inner margins denticulate. Ambulatory legs very long, spinulous; merus subcylindrical, propodus compressed, dactylus long, slender, compressed, and slightly curved. Sternal plastron much wider than long. Sixth and seventh segments in male abdomen fused; in female, fifth, sixth, and seventh fused.

Contains only two species.

LEUROCYCLUS TUBERCULOSUS (Milne Edwards and Lucas)

Plate 232, figs. 6–11; plate 233

Salacia tuberculosa Milne Edwards and Lucas, d'Orbigny's Voy. l'Amér. Mérid., vol. 6, pt. 1, Crust., 1843, p. 13; atlas, vol. 9, 1847, pl. 2 (type-locality unknown; Chile?; holotype in Paris Mus.).—A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 387, pl. 12, fig. 5.

Salacia sp.? Brito Capello, Jorn. Sci. Lisboa, vol. 3, no. 12, 1871, p. 263, pl. 3, figs. 3, 3*a*, 3*b*.

Diagnosis.—Palms dilated. Merus of ambulatories proximally enlarged. A thick brush of hair on propodus of last three legs.

Description.—Carapace covered with tubercles and fine granulations; short, scattered, fawn-colored hairs in the interregional depressions. Rostrum and superior inner border of orbit finely granulate. Merus of chelipeds ornamented with many longitudinal rows of prominent granules, some of which take the form of more or less spiny tubercles. Manus dilated and covered with fine granules and occasional spiny tubercles. Ambulatory legs granulate; ischium armed above with an erect spine; some spines also on the merus especially of the first two pairs where they form a row continuous with the ischial spine; merus proximally enlarged; granules of propodus arranged in rows; propodus of last three legs covered on the upper surface with a brush of numerous, crowded hairs; in the first leg the hairs are confined to the outer border of the same article; dactylus flattened and deeply grooved, a slight swelling in the old at the base of the horny tip. Sternum finely granulate.

Color.—Carapace yellowish white; tips of walking legs brown.

Measurements.—Type male, length 52, width 55 mm. (M. E. and L.). Male (Chile), length 60, width 71 mm. (Brito Capello).

Range.—From Rio de Janeiro, Brazil (Bouvier), to Chile (Milne Edwards and Lucas; Brito Capello).

Material examined.—Chile(?); 1 male, holotype (Paris Mus.).

LEUROCYCLUS GRACILIPES (A. Milne Edwards and Bouvier)

Plates 82 and 83

Leurocyclus tuberculosus Rathbun, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 573.

Microrhynchus gracilipes A. Milne Edwards, MS., in A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 387.

Salacia gracilipes A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl., vol. 47, 1923, pl. 11, figs. 9 and 10, text-fig. 21 (type-locality, off the Rio de la Plata, lat. 40° 22′ S., long. 60° 35′ W., 30 fathoms; holotype in Paris Mus.).

Diagnosis.—Palms not dilated. Merus of ambulatories not at all enlarged. No brush of hair on propodites.

Description.—Closely related to the preceding, but much smaller. Besides the differences noted above, the chelae are longer; the ambulatories much longer and slender, with the superior basal spines larger.

Measurements.—Immature male (21907), length of carapace 12.7, width 12.5 mm. Adult male (holotype) length 11.6, width 11.7 mm.

Range.—Off the Rio de la Plata; 10½ to 30 fathoms.

Material examined.—Argentina; off Rio de la Plata; January 12, 1888; *Albatross:* Lat. 36° 42′ 00″ S.; long. 56° 23′ 00″ W.; 11½ fathoms; S. brk. Sh.; station 2764; 10 young (21907). Lat. 36° 43′ 00″ S.; long. 56° 23′ 00″ W.; 10½ fathoms; S. brk. Sh.; station 2765; 25 young (21908). Lat. 36° 47′ 00″ S.; long. 56° 23′ 00″ W.; 10½ fathoms; S. brk. Sh.; station 2766; 4 young (21909).

Genus CHIONOECETES Kröyer

Chionoecetes KRÖYER, Naturh. Tidssk., ser. 1, vol. 2, 1838, p. 249; type, *C. opilio* (O. Fabricius).

Peloplastus GERSTÄCKER, Arch. f. Naturg., vol. 22, pt. 1, 1856, p. 102, published April, 1857, according to Stimpson; type, *P. pallasii* Gerstäcker = *C. opilio* (O. Fabricius).

Carapace about as broad as long, breadth at orbits about half as great as across branchial regions; either depressed or partially inflated, more or less tuberculate or spinose. Rostrum short, divided into two flat, triangular horns. Orbits large, shallow, open above so that the short, thick eye-peduncles are visible from above when retracted; cornea large. No preocular tooth or spine; a large postocular tooth, directed forward. Basal antennal article narrow, diminishing distally and ending in a spine; next two articles not dilated; flagellum short.

Chelipeds much shorter than the first three ambulatory legs; fingers long and narrow; palm only slightly enlarged until the crab reaches considerable size (100 mm. or more). Legs more or less compressed. Abdomen composed of seven segments.

Occurs from Cortes Bank (lat. 32° 17′ 00″ N.), off San Diego, California, northward through Bering Sea and Strait to the Arctic, westward on the Siberian coast to long. 173° 24′ 00″ W. and eastward on the Alaskan coast as far as a point 10 miles west of Point Franklin. West coast of Greenland (lat. 70° 42′ 00″ N.) southward to Casco Bay, Maine. Kamchatka; Okhotsk Sea to south coast of Hokkaido (Jesso); sea of Japan to lat. 36° 01′ 30″ N. (coast of Korea). Chile. Littoral to 1,625 fathoms.

KEY TO THE SPECIES OF THE GENUS CHIONOECETES

A¹. Branchial regions depressed or slightly swollen. Lateral margin of carapace exposed in dorsal view as far forward as first pair of ambulatory legs. Rostrum horizontal. Meropodites of legs broadly dilated.

  B¹. Length and breadth of carapace subequal; dorsal surface ornamented with tubercles. Spines of pterygostomian-branchial row small, numerous, and of nearly equal size ________________________________ **opilio**, p. 233.

  B². Carapace broader than long; dorsal surface with a few spines anteriorly. Last three or four spines of pterygostomian-branchial row large ___ **bairdi**, p. 235.

A². Branchial regions much swollen dorsally and laterally concealing a large part of the side margins of the carapace. Dorsal surface spinous. Rostrum ascending. Meropodites of legs narrow.

  B¹. The two dorsal branchial ridges meet outwardly in a curved line marked by two subequal spines. Posterior marginal arch of carapace medially interrupted. Interbranchial space very deeply depressed. **tanneri**, p. 243.

B^2. The two dorsal branchial ridges meet outwardly in an acute angle marked by a large spine. Posterior margin of carapace regularly arcuate. Interbranchial space shallower than in *tanneri*------**angulatus**, p. 247.

CHIONOECETES OPILIO (O. Fabricius)

(CHIONOECETES OPILIO ELONGATUS Rathbun)

Plates 84 and 85

Cancer phalangivm O. Fabricius, Favna Groenlandica, 1780, p. 234, Greenland; not *Cancer phalangium* J. C. Fabricius, 1775.

Cancer opilio O. Fabricius, K. Danske Vid. Selsk. Skr., nye Saml., vol. 3, 1788, p. 182, plate (type-locality, Greenland; type not extant).[34]

Chionoecetes opilio Kröyer, Naturh. Tidssk., ser. 1, vol. 2, 1838, p. 249.—Smith, Trans. Conn. Acad. Sci., vol. 5, 1879, p. 41, and synonymy.—Rathbun, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 74, pl. 4, figs. 5–7, and synonymy; in Grenfell's Labrador, 1909, p. 481.—Hansen, Danish Ingolf-Exped., vol. 3, pt. 2, 1908, p. 13.—Parisi, Monitore Zool. Ital., vol. 27, 1916, p. 189.

Chionoecetes behringianus Stimpson, Proc. Boston Soc. Nat. Hist., vol. 6, Feb., 1857, p. 84 (type-locality, off Cape Romanzoff, Alaska; cotypes, Cat. Nos. 2031 and 53041, U. S. N. M., Cat. No. 1875, M. C. Z.); Journ. Boston Soc. Nat. Hist., vol. 6, 1857, p. 449 [8]; Smithson. Misc. Coll., vol. 49, 1907, p. 8.

Peloplastus pallasii Gerstäcker, Arch. f. Naturg., vol. 22, pt. 1, 1856, published April, 1857, according to Stimpson (type-locality, Asiatic Sea; type in Berlin Mus.).

Chionoecetes chilensis Streets, Proc. Acad. Nat. Sci. Philadelphia, vol. 22, 1870, p. 106 (type-locality, Chile; type not extant).

Chionoecetes opilio elongatus Rathbun, Proc. U. S. Nat. Mus., vol. 64, art. 14, 1924, p. 3 (type-locality, Sea of Japan, 245 fathoms; holotype, male, Cat. No. 46636, U. S. N. M.).

Diagnosis.—Carapace chiefly tuberculate. Rostrum horizontal. Branchial regions far apart. Lateral margin of carapace exposed in dorsal view as far forward as first pair of ambulatory legs. Meropodites of legs broadly dilated.

Description.—Surface covered with a very short pubescence and with scattered, unequal, rugose prominences which are blunt, wartlike, and granulate about the middle but become more acute anteriorly. The larger tubercles end posteriorly rather abruptly in a transverse line across the carapace through the middle of the cardiac region. Gastric region depressed and well separated from the branchial regions. The posterior and postero-lateral margins have a double row of granules, the upper row being widely interrupted at the intestinal region. The antero-lateral marginal row of spines or tubercles is continued to the angle of the buccal cavity. A similar but shorter marginal row crosses the subhepatic and suborbital regions. Rostrum horizontal. Supraocular eave a little arched, margin oblique. Two supraorbital notches, a broad suborbital sinus and a narrower one next to the basal antennal article. This article as well as the lower orbit has denticulate margins.

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[34] Dr. K. Stephensen, of the Zoological Museum of Copenhagen, writes under date of Jan. 29, 1923, that the type is not in that museum. He says: "It is very improbable that any of O. Fabricius's types are preserved. King Christian VIII (who died in 1848) bought his collection or, rather, the remaining parts of it, and our museum includes the royal collection; but there are, unfortunately, no notes on the origin of the material."

Chelipeds not more than one and one-half times as long as the carapace except in the old, twice as long; margins of merus rough with sharp granules or denticles; carpus and manus with lines of the same; manus swollen, prismatic; fingers half again as long as palm, deflexed, grooved, smooth except for the denticulate prehensile edges. First three ambulatory legs very long (about twice as long as carapace, in the old three times as long), flat; merus joints very rough except near the middle of the surfaces. Last leg much shorter (about as long as cheliped) and narrower, merus smoother.

First two or three segments of abdomen coarsely granulate; terminal segment in male invaginated in sixth segment.

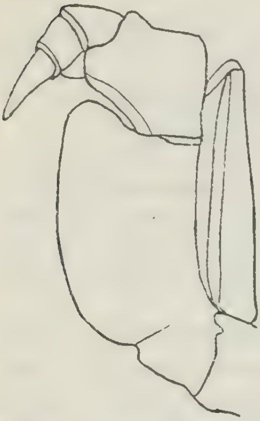

FIG. 88.—CHIONOECETES OPILIO (43803), MAXILLIPED, × 3.7

Color.—Light brick-red above, often iridescent, below yellowish-white; sides of feet shining white (Stimpson).

Measurements.—Male (9231), length of carapace and rostrum (approximately) 125.5, width 127.5, length of cheliped 234, of first ambulatory leg 299 mm. Male (46636, *opilio elongatus*), total length of carapace 118, width 122.5 mm.

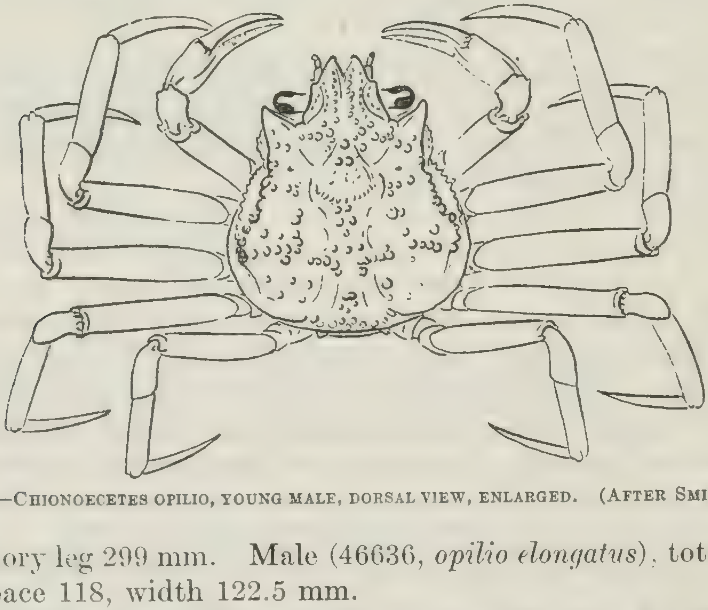

FIG. 89.—CHIONOECETES OPILIO, YOUNG MALE, DORSAL VIEW, ENLARGED. (AFTER SMITH, MS.)

Range.—From west Greenland, in lat. 70° 42′ N. (Hansen), southward to Casco Bay, Maine, in fish stomachs (Smith). From Arctic Alaska, 10 miles west of Point Franklin, westward to northeast Siberia (long. 173° 24′ W.) (Stuxberg), and southward through

Bering Strait to the Aleutian Islands and to Korea (lat. 36° 01′ 30″ N.). Littoral to 350 fathoms (West Greenland) and 1,215 fathoms (Sea of Japan). Chile (Streets).

Variation.—Varies as to roughness of carapace, amount of hairiness and length and width of legs, especially of the merus. In the Sea of Japan the legs are longer than elsewhere, the merus of the second leg usually exceeding that of the first in old males; the length of the second merus is from 5.5 to 6.3 times its width. The same article in similar specimens from Greenland and the Atlantic has a length of from 4.9 to 5.2 times its width, and is shorter or just as long as the first merus. The typical form of the species reappears in Alaskan waters and Bering Sea, but in the Okhotsk Sea there is a tendency toward the long-legged form of the Sea of Japan. This form may be known as *Chionoecetes opilio elongatus.* (See table.)

Material examined.—See table, pages 236-242.

CHIONOECETES BAIRDI [35] Rathbun

Plates 86 and 87

Chionoecetes opilio Rathbun (part), Proc. U. S. Nat. Mus., vol. 16, 1893, p. 74.

Chionoecetes bairdi Rathbun, Proc. U. S. Nat. Mus., vol. 64, art. 14, 1924, p. 3 (type-locality, head of Kingcombe Inlet, British Columbia; H. E. Nichols; 1 male, holotype, Cat. No. 5862, U.S.N.M.).

Diagnosis.—Near *opilio.* Carapace a little wider than long (length measured to tip of rostral teeth). The spines in the row leading from the pterygostomian region backward to the branchial region become suddenly larger, the last three or four spines being of considerable size; in *opilio* these spines do not increase notably in size. Several other prominences of the antero-lateral regions are spinous instead of tuberculous. Outer orbital tooth curved more strongly inward than in *opilio*, rostral teeth narrower, interspace wider. Spines of legs longer.

Description.—The branchial regions are more depressed than in *opilio*, and in consequence the width is greater; the width exceeds the length, while in *opilio* the width is subequal to the length. The inclined subtriangular facet of the anterior branchial region is steeper, higher and shorter than in *opilio*; the highest point is marked by a spine, instead of a tubercle; in *opilio*, there are no dorsal spines, that is, none above those in the submarginal row. In *bairdi* the last (posterior) three or four spines of the pterygostomian-branchial row are notably enlarged; also the outermost of the prominences in the transverse branchial row is spinous or spinulous. The whole animal is rougher than in *opilio.* The carapace is narrower across the orbits, the outer orbital teeth are bent inward more; the median emargination of the front is wider and the teeth narrower and with less arched margins,

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[35] For Prof. Spencer F. Baird, first U. S. Commissioner of Fish and Fisheries.

Material examined of Chionoecetes opilio

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
EAST COAST OF NORTH AMERICA	° ′ ″	° ′ ″			°*F*						
West Greenland:											
Waaigat Channel						Aug., 1883		U. S. S. *Yantic*, Ensign H. G. Dresel, U. S. N., Greely Relief Party.	3♂	9231	
Arswek	69 30 00					Apr. 14, 1896		P. H. Sorensen	1♂ 1♀	21637	
Godhaven						June 8, 1884		Ensign C. S. McClain, U. S. N., U. S. S. *Alert.*	9	13770	
Exact locality not given						1884		do	3 y	13784	
Davis Strait						July, 1879		N. P. Scudder, U. S. Fish Commission.	1 left cheliped	40191	From halibut stomach.
Labrador: 1 m. N. of Battle Harbor.			50	fne. S		Sept. 14, 1908		Owen Bryant	1♂ 2♀ 2 y	38425	
Newfoundland:											
South by east from Burin, Placentia Bay.			110	rky. pbly		Sept. 28, 1908		do	1♀ 1♂ 1♀	38424 B. S. N. H.	
Northwest of Flemish Cap.	47 40 00	47 35 30	206	gn. M. bk. Sp.		Aug. 12, 1886	2697	*Albatross*	1 sm. ♀	11874	
Off southeast coast	47 13 00	52 24 00	86	gy. S	29.5	July 2, 1885	2457	do	1♂	10206	
Northeast part of Grand Bank.	47 10 00	51 02 00	82	gn. M. fne. S.	29.7	June 26, 1885	2453	do	2♂	10207	
Grand Bank								N. P. Scudder, U. S. Fish Commission.	1 lge. ♀	19031	
Off southeast coast	46 23 00	52 45 00	88	crs. gy. S	29.5	July 2, 1885	2459	*Albatross*	1♂ 1♀	10204	
Green Bank	45 47 00	54 13 30	59	fne. S. bk. Sp.	30	July 3, 1885	2461	do	1 y. ♂	10205	
Nova Scotia:											
Off Cape North, Cape Breton Island.						Aug. 21, 1880		Sch. *Bellerophon*, Capt. Andrew McKenzie.	1 lge	41493	Gloucester donation No. 812 to U. S. Fish Commission.
Chebucto Head, N. by E. ¼ E., 26 miles.						Sept. 6, 1877	85, 86	*Speedwell*	2 y 2 y	18762 Y. U. M.	
SE. ½ S. from Cape Sable, 27 to 31 miles.	43 05 30 to 43 06 00	65 02 00 to 65 09 00	90–91	fne. sdy. M	33.5–39	Aug. 21, 1877	43–46	do	2	Y. U. M.	

Off Banquereau	44 36 00	57 07 00	200					Daniel McEachern, Sch. *Guy Cunningham*.	1 y	Y. U. M.	Gloucester donation No. 318 to U. S. Fish Commission.
Banquereau and vicinity.	44 28 00	56 24 00 to 59 06 00	170-200					Capt. Matthew Parks, Sch. *Davy Crockett*.	1	Y. U. M.	Gloucester donation No. 353 to U. S. Fish Commission.
Western Bank (or Sable Island Bank).								Capt. Wells & crew, Sch. *H. A. Duncan*.	11	Y. U. M.	Gloucester donation No. 740 to U. S. Fish Commission.
NORTHWEST AND WEST COASTS OF NORTH AMERICA.											
Arctic Alaska:											
10 miles west of Point Franklin.			13½	S.		Aug. 31, 1883		J. Murdoch, Point Barrow Exped., U. S. Signal Service.	2♂	7879	
Off Icy Cape	70 21 00	161 25 00	9-10	M. P.		Aug. 19, 1913	23	Canadian Arctic Exped.	2 y.♂ 1y.♀	Ottawa Mus.	
Off Point Hope			25			July 13, 1884		U. S. R. S. *Corwin*, Capt. M. A. Healy.	2♂ 3♀	14700	
Exact locality not given								U. S. R. S. *Corwin*, Capt. C. L. Hooker.	6♂ 8♀	14699	
North of Bering Strait	66 12 00	168 54 00	30	Sh. P.	35	July 3, 1884		Lieut. Geo. M. Stoney, U. S. N.	1♀	14694	
Bering Strait and Bering Sea (American side):											
Bering Strait						1853-6		Wm. Stimpson, N. Pac. Expl. Exped.	5♂ 1♀ 1♂ 1♀	2031 1875, M.C.Z.	Labeled by Stimpson, "*Chionoecetes behringianus*." Do.
"Russian America"						1853-6		Wm. Stimpson, N. Pac. Expl. Exped.	1♀	53041	Gift of Boston Soc. Nat. Hist.
Mouth of Port Clarence, Alaska, just south of Bering Strait.			7-12			1874		W. H. Dall	2♂ 1♀	14680	
Northwest of Nunivak Island.	60 27 00	169 04 00	24	fne. gy. S.	40.3	Aug. 2, 1893	3517	*Albatross*	11		Medium size, in 3 fish stomachs.
Do.	60 22 00	168 45 00	25.5	gy. S. bk. Sp.		June 5, 1884		Lieut. Geo. M. Stoney, U. S. N.	1♂	14695	

Material examined of Chionoecetes opilio—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°*F*						
NORTHWEST AND WEST COASTS OF NORTH AMERICA—continued											
Bering Strait and Bering Sea—Continued											
Northwest of Pribilof Islands.	57 48 00	171 21 00	52	gn. M	38	Aug. 5, 1893	3527	*Albatross*	2		In 1 fish stomach.
Do	57 10 00	170 47 15	47	bl. M. Sh	40	Aug. 3, 1891	3442	do	1 lge. ♂	1222, M. C. Z.	
Do	57 06 30	170 22 30	20	fne. gy. S. Sh		do	3438	do	1 y	17073	
Do	57 06 00	170 35 00	41	fne. bk. S	44	do	3439	do	54	17074	
Do	57 05 00	170 41 00	48	bk. M. Sh		do	3440	do	3 lge., 3 sm	17075	
Southeast of Pribilof Islands.	56 28 00	169 46 00	51	fne. gy. S. M	39.5	Sept. 2, 1893	3553	do	2 lge	19301	
Do	55 58 00	167 16 00	75	gn. M	36.8	Aug. 22, 1895	3610	do	1 y	55744	
Iliuliuk Harbor, Unalaska.	53 59 36	166 29 43	85	gn. M	41	Aug. 15, 1890	3311	do	1 y	55745	
Between Bristol Bay and Pribilof Islands.	57 22 20	164 24 40	29.5	bk. M	44.8	June 14, 1890	3252	do	111	15831, 15855	
Do	57 05 50	164 27 15	36	M. S	35	do	3253	do	5 lge	15856	
North of Unimak Island.	56 18 00	164 34 10	49	gn. M. bk. Sh	35	do	3256	do	1 ♂ 1 lge. ♂	15859 M. C. Z.	
Do	55 04 00	165 04 00	61	bk. M	39.5	June 24, 1890	3263	do	1 ♂ 12 y	15857	
Off Khoudoubine Islands.	56 30 45	161 50 15	53	fne. S. gn. M	38.2	June 29, 1890	3282	do	129	15843, 15858	
Do	56 25 40	162 39 15	41	fne. gy. S	37	June 28, 1890	3279	do	2 y	15840	
Do	56 12 30	162 13 00	47	fne. gy. S	38.8	do	3278	do	2 y	15839	
Off Cape Seniavin	56 39 30	160 29 00	37	fne. gy. S. Sh. G.	41.5	July 17, 1890	3286	do	3 y	15844	
Do	56 26 30	160 00 00	15	bk. G	45.5	do	3288	do	3 y	15845	
ASIA.											
East coast of Siberia:											
Off St. Lawrence Bay, Bering Strait.	65 25 00 to 65 28 00	171 11 00 to 171 26 00	6.25–11			July 20, 1885		U. S. S. *Corwin*, Capt. M. A. Healy.	1 ♂	14696	
Port Providence, Bering Strait.			8–20	M		1880		W. H. Dall	1 ♂ 1 ♀	14683	

		Long. E.								
Commander Islands	N. point of Copper Island, N. 76° E., 8.8 miles. 54 50 20	167 13 00	56–57	gn. S		June 14, 1906	4788	*Albatross*	1 y	46499
Do	Cape Monati, Bering Island, N. 52° W., 8.75 miles. 54 36 15	166 58 15	72–76	rky		do	4791	do	1 y	46543
Avacha Bay, Kamchatka.			13			June 21, 1900		do	1 lge. ♂	32230
Do	52 58 00	158 36 00	16	bk. M	47.7	Aug. 19, 1896	3642	do	1 ♂ 1 y	20129
Southeast coast of Kamchatka.	51 16 00	158 03 00	100	bk. S. P	31.7	Aug. 20, 1896	3643	do	25	20130
Do	51 09 00	157 48 00	96	bk. S	33.1	do	3644	do	25	20131
Off Avacha Bay, Kamchatka.	Staritschkof Island, S. 70° W., 5 miles. 52 47 20	158 44 30	58–69	S. P		June 20, 1906	4794	do	13 y	46492
Do	Staritschkof Island, S. 71° W., 4 miles. 52 47 00	158 43 00	48	S. P. Sh		do	4796	do	2 y	46544
Do	Staritschkof Island, S. 76° W., 4.8 miles. 52 46 50	158 44 30	69–48	gn. S. P		do	4795	do	2 ovig. ♀	46491
On Codfish Banks, Okotsk Sea, Kamchatka.	Mouth of Aangan River, N. 75° E., 8 miles. 51 38 00	156 21 00	25	gn. S		June 21, 1906	4799	do	27 y	43810
Do	Mouth of Aangan River, N. 71° E., 8.5 miles. 51 37 00	156 21 00	25	gn. S	36.9	do	4798	do	12 y	46545
Japan:										
Off Sakhalin Island	Between 2 and 10 miles west of Robben Island.		20	fne. gy. S		Aug. 31, 1896	3651	do	1 y	20132
Okhotsk Sea	Flat Hill, N. 48° W., Cape Patience, S. 74° W. 48 43 10	144 59 30	67	S. P	30.9	Sept. 27, 1906	5024	do	1 y	46557
Do	48 36 10	145 17 30	119	gn. M. bk. S. G.	30.4	Sept. 28, 1906	5026	do	4 y	43818
Do	48 35 30	145 [1]20 00	109	gn. M. crs. bk. S.	30.1	Sept. 27, 1906	5022	do	2 y	43815
Do	48 27 30	145 23 30	188	fne. gy. S. P. (?)	32	Sept. 28, 1906	5027	do	2 y. ♂	46588
Do	Cape Tonin, Sakhalin Island, N. 66° W., 21.3 miles. 46 41 30	143 57 40	100	br. M. bk. S. P.	30.4	Sept. 26, 1906	5018	do	1 y	46556
Sakhalin Island								M. Sasaki	1 ♂	56387

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[1] Approximate.

Material examined of Chionoecetes opilio—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude E.									
	° ′ ″	° ′ ″			°F						
ASIA—continued											
Japan—Continued											
Aniwa Bay, Sakhalin Island.	Korsokov Light, N. 5° E., 9.5 miles. 46 30 30	142 43 30	21–32	gn. M. S		Sept. 24, 1906	5010	*Albatross*	29 y	43806	
Do	46 24 10	142 40 00	25	gn. M	38.5	do	5009	do	1 y.♂	43817	
Do	46 18 30	143 05 40	42	gn. M	33.9	Sept. 25, 1906	5011	do	1 y.♂	46555	
Do	46 17 50	143 08 30	42–43	gn. M		do	5012	do	2♂	43802	
Do	46 17 00	143 09 00	43		36.7	do	5013	do	2♂ 6 y	43803	
Do	46 07 50	142 37 20	40	gn. M. fne. gy. S.	33.9	Sept. 24, 1906	5008	do	7 y	43811	
Do	46 04 40	142 27 30	42–43	gn. M. fne. gy. S.		do	5005	do	9 y	43816, 46554	
Do	46 04 00	142 29 00	43–42	gn. M. fne. gy. S.	36.1	do	5006	do	1♂ 4 y	43807	
Yezo Strait	44 05 00	145 30 00	300–533	br. M. fne. bk. S. G.	34.9	Sept. 30, 1906	5032	do	1 y.♂ 1 y.♀	46559	
South coast of Hokkaido	42 17 30	142 07 30	61	br. M. fne. bk. S. co. S.	49.8	Oct. 3, 1906	5042	do	1♂	43805	
Do	Kinka San Light, N. 61° W., 15.4 miles. 38 09 24	141 52 30	129	dk. gy. S. bk. Sh.	40.7	Oct. 10, 1906	5048	do	1 y.♂	46560	*C. opilio elongatus.*
Sea of Japan	Bomasiri Shima (off north end of Rebun To), N. 50° E., 9.2 miles. 45 23 20	140 48 00	325	gn. M	33	Sept. 22, 1906	4991	do	1♂ 1♀ 1 y	46539	Do.
Do	Maruyama Zaki, S. 12° E., 6.1 miles. 43 23 10	140 37 00	92	S	39.7	Sept. 20, 1906	4989	do	3 y	46553	Do.
Do	Benkei Mizaki Light, S. 3° W., 15 miles. 43 04 20	140 12 10	248–224	gn. M	33	Sept. 19, 1906	4984	do	1♂ 1 ovig. ♀	46635	Do.
Do	Benkei Mizaki Light, S. 2° E., 12 miles. 43 01 35	140 10 40	428	gn. M	32.7	do	4983	do	2♂	46637	Do.
Do	Benkei Mizaki Light, S. 3° E., 10.5 miles. 43 00 00	140 10 30	390–428	gn. M	32.7	do	4982	do	1♂ 1 y	46542	Do.

Do.	N. point Sado Island, S. 31° W., 15 miles.	38 33 00	138 40 00	176–200	fne. br. M. (?)	34.9	July 18, 1906	4812	do	6♂ 2♀ (1 ovig.) 3 y.	43799	Do.
Do.	N. point Sado Island, S. 30° W., 17 miles.	38 35 00	138 41 00	200	br. M. bk. S.	33.9	do	4813	do	2♂ 2 ovig. ♀	46546	Do.
Do.	Hime Saki Light, S. 16° E., 3.8 miles.	38 09 00	138 32 12	245	fne. br. M.	33.1	July 19, 1906	4819	do	2♂	46547 46636	*C. opilio elongatus.* Holotype. *C. opilio elongatus.*
Do.	Sudzu Misaki Light, N. 57° W., 16 miles.	37 23 00	137 36 00	163	gn. M.	34.9	July 22, 1906	4828	do	1 ovig. ♀ 4 y.	43813 46540	Do.
Do.	Sudzu Misaki Light, N. 58° W., 21 miles.	37 20 00	137 41 30	527–548	gn. M.	32.9	July 22, 1906	4829	do	4 y.	46671	Do.
Do.	Sudzu Misaki Light, N. 60° W., 12 miles.	37 25 00	137 32 00	114	fne. gy. S. bk. Sp.	42.5	July 21, 1906	4826	do	2 y.	46548	Do.
Do.	Boussole Rock, Matsu Shima, N. 76° W., 17 miles.	37 29 00	131 18 00	1,215	gn. to br. M.	32.8	July 28, 1906	4851	do	1 ♀	43808	Do.
Do.	Dogo Island, Oki Group, SE. 14 miles.	36 29 20	133 01 20	100	gn. M. bk. S. Glob.	39.9	July 26, 1906	4843	do	1♂ 3 y.	46549	Do.
Off east coast of Korea		36 32 00	129 45 00	150	gn. M. fne. gy. S.		Aug. 1, 1906	4868	do	8 y.	46552	Do.
Do.		36 31 00	129 16 00	150	gn. M. fne. gy. S.	33.4	do	4867	do	1 ovig. ♀ 1 y.	43801	Do.
Do.		36 30 30	129 13 00	91–60	gn. M. fne. gy. S.		do	4870	do	4 y.	43819	Do.
Do.		36 30 00	129 42 00	94	gn. M. fne. gy. S.		do	4869	do	4 y.	43814	Do.
Do.	Cape Clonard, S. 34° W., 18 miles.	36 20 00	129 50 00	184	gn. M.	32.9	July 31, 1906	4862	do	2♂	43800	Do.
Do.	Cape Clonard, S. 23° W., 13 miles.	36 18 00	129 44 00	122	gn. M.	34.1	do	4860	do	4 y.	43812	Do.
Do.	Cape Clonard, S. 7° W., 12 miles.	36 17 00	129 40 00	67	gn. M. S. P.	39	do	4858	do	1 ♀	43804	Do.
Do.	Cape Clonard, S. 12° W., 12 miles.	36 17 00	129 41 00	93	gn. M.		do	4859	do	1 cheliped, 1 leg of ♀.	46551	Do.
Do.	Cape Clonard, N. 50° W., 3.3 miles.	36 03 30	129 41 00	89	gn. M.	36.1	July 30, 1906	4856	do	2 immature ♀	46550	Do.
Do.	Cape Clonard, N. 36° W., 5.5 miles.	36 01 30	129 42 00	70–89	gn. M.	61	do	4855	do	1 y. ♂ 1 y. ♀	43809	Do.

Material examined of Chionoecetes opilio—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
ASIA—continued	° ′ ″	° ′ ″									
Japan—Continued									1 lge. ♂	18637	Received through U. S. Fish Commission, from the Japanese Exhibit, World's Columbian Exposition, 1893, *C. opilio elongatus*.
Locality not given									1♂ 1♀	32227	Received through Bureau of Fisheries from German Educational Exhibit, Louisiana Purchase Exposition, 1904, *C. opilio elongatus*.

than in *opilio*. The lateral margin of the carapace is deeply scalloped; this character alone serves to distinguish very young specimens (10 mm. and under) from the allied species. Chelipeds and legs more coarsely and abundantly spinous than in the allied species. Male abdomen with sides a little more concave, terminal segment with its free edge more arched, the segment less invaginated in the preceding segment.

Measurements.—Male holotype, length of carapace and rostrum 73.3, width 81.2, length of cheliped about 100, of first ambulatory leg about 182 mm. Male (31661), length of carapace and rostrum 121, width 139.4, length of cheliped about 197, of first ambulatory leg, 292 mm.

Range.—From the southeastern part of Bering Sea (lat. 56° 18′ 00″ N.) and the Aleutian Islands (about long. 178° E.) eastward and southward to British Columbia (Kingcombe Inlet). From shallow water to 259 fathoms; usually in less than 100 fathoms.

Material examined.—See table, pages 244–246.

CHIONOECETES TANNERI (Rathbun)

Plates 88, 89, and 234

Chionoecetes tanneri RATHBUN (part), Proc. U. S. Nat. Mus., vol. 16, 1893, p. 76, pl. 4, figs. 1–4 (type-locality, Gulf of the Farallones, California, 29 fathoms; holotype, Cat. No. 15860, U. S. N. M.); Harriman Alaska Exped., vol. 10, 1904, p. 174.—HOLMES, Occas. Papers Calif. Acad. Sci., vol. 7, 1900, p. 40.—WEYMOUTH, Leland Stanford Jun. Univ. Publ., Univ. Ser. No. 4, 1910, p. 35, pl. 7, fig. 19.

Diagnosis.—Carapace chiefly spinose. Rostrum ascending. Branchial regions nearly meeting on median line, interspace deeply depressed. Lateral margin of carapace exposed in dorsal view only as far forward as third pair of ambulatory legs. Meropodites of legs narrow, little dilated.

Description.—Carapace much swollen at the branchial regions, which are distended both vertically and laterally, concealing the lateral margin of the carapace. Between the branchial regions, which nearly meet, there is a deep, narrow depression which widens anteriorly and joins the cervical suture. Carapace covered with spines and spinules instead of tubercles and granules; the transverse row across the branchial regions is more prominent than in *opilio*, and is well in advance of the cardiac row; from its outer end a row of spines runs obliquely forward toward the orbit. The outer spine of the oblique branchial row is as large as the outer spine of the transverse row, is directly in front of it, and is usually more produced laterally; the two rows therefore join in a curve not at an angle. Another row of spines forms the lateral supra-marginal border of the branchial region, and is continued on the pterygostomian region; from this row

Material examined of Chionoecetes bairdi

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Lat. N.	Long. W.									
Bering Sea (American side):	° ′ ″	° ′ ″			°F						
Southeast of Pribilof Islands.	55 58 00	167 16 00	75	gn. M	36.8	Aug. 22, 1895	3610	*Albatross*	200	19310	1 young *C. opilio* at this station.
Do	55 17 00	167 34 00	91	gn. M. S	37.1	Aug. 13, 1895	3605	do	1 lge. ♂, 200 sm.	19307	
North of Unimak Island	56 18 00	164 34 10	49	gn. M. bk. Sh.	35	June 14, 1890	3256	do	1 ovig. ♀	55742	1 large *C. opilio* at this station.
Aleutian Islands and Alaska Peninsula:											
Kyska Harbor, Kyska Island.			9–12	sdy. M		1873		W. H. Dall	1 ♀	14681	
Bay of Islands, Adakh Island.			9–16	M. S		1873		do	1 ♀ 3 y	13114	
Nazan Bay, Atka Island			10–16	S		1873		do	14 y	14776	
Captains Bay, Unalaska			Beach.	Sh., etc		Sept. 10, 1874		do	1 y. ♂	13140	
Captains Harbor or Port Levashef, Unalaska.			9–16			1871, 1874		do	1 ♂ 4 ♀	14675	
Do			20–30	M. Sh		1874		do	2 y	14773	
Do	Ridge		80	S		Sept. 18, 1874		do	9 y	13133	
Do	Inside of ridge		60–80	S. St		1871		do	1♂	14685	
Do	Between South Flat and West Head.		30	sdy		1872		do	2 y	13123	
Between Pinnacle and Ulakhta or Dutch Harbor, Unalaska.			16			1874		do	1 y	13138	
Iliuliuk, Unalaska			10	Shingle		1871		do	1 y	14774	
Do			10–12	M. St		1871		do	1 ♀	13113	
Do	Off village		15	gy. S		1871		do	5 ♂ 2 ♀	13119	
Iliuliuk Harbor, Unalaska.	53 59 36	166 29 43	85	gn. M	41	Aug. 15, 1890	3311	*Albatross*	77	15849	1 young *C. opilio* at this station.
Unalaska Bay						May 24, 1906		do	1 ♂	46561	From stomach of cod.
Off Aektok Island	53 56 00	165 40 00	54	gy. S	42	July 28, 1888	2844	do	1 y. ♂ 1 y. ♀	15471	
North of Unimak Island	55 04 00	165 04 00	61	bk. M	39.5	June 24, 1890	3263	do	1♂ 1 ovig. ♀ 8 y	15837	1 large male and 12 young *C. opilio* at this station.
Northwest of Unimak Island.	54 48 00	165 13 30	70	bk. S. G	39	do	3258	do	1 y	15835	
East of Unimak Island	55 06 00	163 28 00	9	fne. dk. vol. S	40	June 26, 1894	3600	do	1 y	18980	
South of Unimak Island	54 20 30	163 37 00	61	bk. S. M		May 21, 1890	3216	do	45	15826	"1 quart discarded."
Shumagin Islands	55 16 00	160 28 00	69	gn. M	43	Aug. 2, 1888	2849	do	4 ♂ 3 ♀	15469	
Do	55 10 00	160 18 00	110	gn. M	41	July 31, 1888	2848	do	50	15467, 20128	

Do	54 55 00	159 52 00	35	gy. S. brk. Sh.	44.8	Aug. 4, 1888	2851	do	1 y	15476	
Do	55 15 00	159 37 00	58	bk. S.	41.8	do	2852	do	2 ♂ 1 y	15470	
Do	Off Round Id., Coal Harbor, Unga Id.		6-8	M		1872		W. G. Hall	2 ♂ 1 ♀	14681	
Do	Coal Harbor, Unga Id.		3	Shingle		1872		do	1 ♂	14686	
Do	do					1872		W. H. Dall	2 ♂	14679	
Do	Popof Strait					July 5, 1872		W. G. Hall	1 ♂	14687	
Do	Sanborn Harbor, Nagai		(1)	Under stones		1872		W. H. Dall	1 ♂	14674	
Chiachi Islands			20	M		1874		do	3 y	13121	
Chignik Bay			7-18	S		1874		do	2 y	13128	
Chajafka Cove, Kodiak			12-14	M. S.		1874		do	1 ♂ 1 ♀	14677	
Do			15-20	G		July 10, 1880		do	3 ♂ 3 ♀ 1 y	12526	
Off Karluk, Kodiak	Cape Ugat, NE. by N., Cape Karluk, S. SW. ¼ W., Church, S. SE. ½ E.		31	gy. S. Sh.	46.4	July 19, 1897	3674	*Albatross*	14 y	21766	
Do	Cape Ugat, NE. by E., Church, SE. ¼ S.		110	gn. M	39	do	3675	do	5 ♂ 3 ♀ 8 y	21767	
Alitak Bay, Kodiak	Cape Alitak, S. 71° W., 5.5 miles.		29	dk. gy. M. R.		Aug. 6, 1903	4279	do	1 y	31556	
Do	Cape Alitak, S. 44° W., 6.2 miles.		41-35	gn. M. fne. S.		do	4274	do	1 ♂	31661	
Do	Cape Alitak, S. 41° W., 7.1 miles.		36-41	gn. M. fne. S.		do	4273	do	2 ♂ 2 ♀	31555	
Off Sitkalidak Island	57° 00′ 00″	153° 18′ 00″	69	gn. M	44	Aug. 10, 1888	2855	do	3 ♂ 9 ♀	15468	
Afognak Bay, Afognak Island.	Point Lipsett, N. 83° W., 1.9 miles.		16-17.5	gy. S. brk. Sh.	50.9	Aug. 3, 1903	4268	do	1 y	31660	
Do	Point Lipsett, SW., 1 mile.		14-19	hrd. gy. S. R.		do	4270	do	1 ♂ 2 ♀	31554	
Southeastern Alaska:											
Chugachik Bay, Cooks Inlet.			20-60	sdy. M		June 30, 1880		W. H. Dall	1 ♂	14688	
Port Etches			12-18			1874		do	9 ♂ 6 ♀ 9 y	14691	
Port Mulgrave, Yakutat Bay.			6-40			1874		do	1 y	14775	
Taiya Inlet, Lynn Canal	Indian Rock, S. 9° W., 8.1 miles.		247-259	rky	36.8	July 16, 1903	4255	*Albatross*	3 ♂ 1 ♀	31553	
Chilkoot Inlet	Indian Rock, S. 63° E., 3.3 miles.		45-51	gn. M	40	do	4254	do	1 ♂	31659	
Stephens Passage	Hugh Point, N. 89° W., 3.9 miles.		198-201	gy. M	40.8	July 14, 1903	4252	do	1 ♀	31552	
Sitka Harbor			15	G. M		1874		W. H. Dall	1 y	14772	
Wrangell						Aug., 1882		Dr. W. H. Jones, U. S. N.	1 ♂	5795	
Do	22 miles NW. of		25			Dec. 6, 1922		J. S. Ligon	2 y	Returne	From Biol. Surv., U. S. Dept. of Agriculture.
Eastern Passage, vicinity of Stikine River delta.	Center of Simonof Island, N. 61° W., 5.3 miles.		79-70	gy. M	43.6	July 13, 1903	4249	*Albatross*	1 ♀	31551	

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[1] Shoal water.

Material examined of Chionoecetes bairdi—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°F						
Southeastern Alaska—Con.											
Boca de Quadra	Center of Grouse Islet, Mink Bay, N. 20° W., 2.5 miles.		48–57	sft. gn. M.	44.6	July 6, 1903	4223	do	2♂ 3♀	31549	
Vicinity of Yes Bay, Behm Canal.	Cannery Point, Yes Bay, N. 55° W., 1 mile.		39–45	sft. gy. M. R.	44.7	July 8, 1903	4233	do	1♀	31550	
Do	Cannery Point, N. 54° W., 1.5 miles.		45	gy. M. rky.	43.7	do	4234	do	1 y	31658	Soft shell.
Kasaan Bay, Prince of Wales Island.	Sandy Point, N. 62° W., 1.2 miles.		42–47	gn. M.	49.1	July 11, 1903	4243	do	2 y	31557	
Southeastern Alaska									1♂	16292	
British Columbia: Head of Kingcombe Inlet.						Aug. 2, 1881		Lieut. Henry E. Nichols, U.S.N.	1♂	5862	Holotype.

a short branch runs up on the branchial region. An irregular row of small spines crosses the gastric region. The orbits, outer margin of the post-orbital teeth and the infero-lateral and posterior margins of the carapace are armed with spinules. Rostral horns more upturned than in *opilio* and a little longer and narrower, leaving a wider interspace.

Posterior margin of epistome strongly deflexed in the center and arched at the sides. The external maxillipeds when in place do not fit closely into the buccal cavity, as in *opilio;* merus with spinous margins. Ambulatory legs armed with longer and stouter spines than in *opilio.* In adults more than in young the legs are longer in *tanneri,* especially the meropodites, which are much narrower, and in the male do not widen at the proximal end as in *opilio.* Legs of female shorter than of male, as is the case in *opilio.*

Second segment of male abdomen bent downward at lateral extremities in almost a right angle. On the sternum in front of the abdomen there is a transverse ridge of sharp tubercles.

Measurements.—Male, holotype, length of carapace on median line 119, width exclusive of spines 130, length of first ambulatory leg 316, length of its merus 134, greatest width of same merus 18.5 mm.

Range.—From Washington (lat. 47° 29′ 30″ N.) to the extreme northern part of Lower

California (lat. 32° 17′ 00″ N.). Depth, from 29 to 1,062 fathoms; seldom less than 250 fathoms.

Material examined.—See table, pages 248–250.

CHIONOECETES ANGULATUS Rathbun

Plates 90 and 91

Chionoecetes angulatus RATHBUN, Proc. U. S. Nat. Mus., vol. 64, art. 14, 1924, p. 4 (type-locality, south of Pribilof Islands; 1,401 fathoms; station 3604, *Albatross;* male, holotype, Cat. No. 19303, U.S.N.M.).

Diagnosis.—Near *tanneri.* The two dorsal rows of spines and tubercles on the branchial region meet at the outer margin in an acute angle. Interbranchial space not deeply depressed. Rostral teeth as wide as, or wider than, the length of their inner margin.

Description.—Specimens of this species were formerly placed with *C. tanneri*, but the subsequent collection of considerable material demonstrates that the form from northern waters may well be classed as a distinct species.

Carapace more pubescent than in *tanneri;* the pubescence of *tanneri* is less dense and more easily rubbed off.

Posterior margin of carapace gently arcuate; in *tanneri* there is a median interruption or small shallow bight.

Interbranchial space not so deeply depressed; the urogastric region is defined by a groove on either side; in *tanneri* the whole region is depressed and narrowly compressed.

The two dorsal ridges on the branchial region converge in straight lines and meet in an acute angle marked by a single, though not simple, large spine; in *tanneri* the ridges meet in a curved line marked by two subequal spines. The posterior of these ridges is formed of bunches of acute tubercles, except the outer one or two on each side, which may be spines or spinous; in *tanneri* this ridge is composed largely of single spines.

The rostral teeth are wider, the width at base being in half-grown specimens as great as the length of the inner margin; in old specimens, greater than the length.

Legs more dilated toward the proximal end.

Measurements.—Male, holotype, length of carapace on median line 73, width exclusive of spines 78.6, length of first ambulatory leg 182, length of its merus 73.3, greatest width of same merus without spines, 13 mm. Largest male (46638), length of carapace on median line 134.4, width exclusive of spines 151.5, length of first ambulatory leg 356.5, length of its merus 149.7, greatest width of same without spines 25 mm.

Range.—From east coast of Kamchatka (Avacha Bay) eastward through Bering Sea to the Pribilof Islands, thence southward along the Aleutian Islands as far east as long. 167° 25′ 00″ W. From

Material examined of Chionoecetes tanneri

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Lat. N.	Long. W.									
	° ′ ″	° ′ ″			°F						
Washington:											
Off Sea Lion Rock	47 29 30	125 43 00	636	gn. M.	37.9	June 28, 1889	3070	*Albatross*	1 y.	20673	
Off Grays Harbor	46 55 00	125 11 00	559	br. Oz.	38.4	Sept. 23, 1888	2871	do	6 ♂	15185	
California:											
Gulf of the Farallones	37 43 20	122 43 00	29	crs. G.	50.4	Mar. 10, 1890	3100	do	1 ♂	15860	Holotype.
Off Halfmoon Bay	37 23 00	123 08 00	391	C.	40.8	Mar. 11, 1890	3104	do	8 lge. ♀ 8 y.	15489 15490	
Off Pigeon Point	Pigeon Point Lighthouse, S. 34° E., 10.5 miles. 37 19 00	122 30 00	5–65			Oct. 6, 1904	4567	do	1 y. ♂	46597	
Do	37 08 00	122 47 00	296	fne. gy. S.	41.8	Mar. 12, 1890	3112	do	1 y.	15493	
Monterey Bay	36 43 00	122 12 00	581	gn. M. S.	37.8	Apr. 17, 1897	3670	do	1 ovig. ♀ 40 y.	26131 26118	
Do	36 47 00	122 11 00	278	gn. M. fne. S.	42.7	Apr. 16, 1897	3669	do	2 ♀ 4 y.	26130 26370	
Do	Point Pinos Lighthouse, S. 31° E., 9.3 miles.		389–456	gn. M.		May 23, 1904	4513	do	1♂	46483	
Do	Point Pinos Lighthouse, S. 39° E., 10.7 miles.		394–524	gn. M. R.		do	4514	do	1♂	46485	
Do	Point Pinos Lighthouse, S. 18° E., 8.1 miles.		198–495	gn. M. crs. S. Sh.		do	4515	do	1♂	46463	
Do	Point Pinos Lighthouse, S. 49° E., 12.5 miles.		718–756	gn. M.		May 24, 1904	4516	do	4 ♂ 1 ♀	46482	
Do	Point Pinos Lighthouse, S. 52° E., 9.1 miles.		750–766	gn. M. S.		do	4517	do	2 ♀ 2 ♀ 2♂ 4 ♀	46486 46481 46484	
Do	Point Pinos Lighthouse, S. 58° E., 12.7 miles.		766–800	sft. gy. M.		May 27, 1904	4528	do	2 ♂	46467	
Do	Point Pinos Lighthouse, S. 78° E., 6.8 miles.		755–958	sft. gy. M.		do	4530	do	1 ♂	46519	
Do	Point Pinos Lighthouse, S. 74° E., 7.4 miles.		861–1062	hrd. S. M.		May 31, 1904	4537	do	3♂ 5 ♀	46594	
Do	Point Pinos Lighthouse, S. 85° E., 6.5 miles.		795–871	hrd. gy. S.		do	4538	do	4♂ 1 ♀ 4♂ 1 ♀	46480 46595	

Do.	Point Pinos Lighthouse, SE., 11.2 miles.		389-551	gn. M.		June 1, 1904	4510	do.	1 ♀	46477
Do.	Point Pinos Lighthouse, S. 41° E., 9.3 miles.		381-633	gn. M. S.		do.	4511	do.	1 ♀	46475
Do.	Point Pinos Lighthouse, S. 35° E., 7.2 miles.		331-456	hrd. S. M.		do.	4512	do.	1 ♂	46468
Do.	Point Pinos Lighthouse, S. 46° E., 8.4 miles.		849	fne. bk. S. R.		June 3, 1904	4516	do.	1 y. ♀	46596
Off Carmelo Bay	36 30 00	122 00 00	659	gn. M.	37.9	Apr. 27, 1911	5699	do.	3 ♂ 5 ♀ 1 ♂ 4 ♀	55751 Amer. Mus.
Off Point Sur	36 18 50	122 06 00	328	bk. S. M.	41.3	Apr. 3, 1890	3186	do.	2 ♀	15491
Do.	Point Sur, N. 6° W.; Juniperro Mountain, N. 47° E. 35 50 00	121 49 30	475		39.9	Apr. 27, 1911	5698	do.	4 y. 4 y.	47096 Amer. Mus.
West of Piedras Blanca.	Silver Peak, N. 10° E., Pine Mountain, N. 75° E. 35 35 00	121 39 00	485	gn. M. bk. S.	39.8	do.	5697	do.	7 y. 7 y.	55757 Amer. Mus.
West of Point Buchon.	Pine Mountain, N. 42° E. 35 18 30	121 28 00	440		39.9	do.	5696	do.	1 ♂ 2 ♀ 8 y. 1 ♂ 3 ♀ 8 y.	55756 Amer. Mus.
Off Point Conception	34 15 00	120 36 00	284	yl. M.	44.1	Jan. 5, 1889	2892	do.	1 ♂	15483
Off Santa Barbara Island.	Northeast point Santa Barbara Island, N. 89° E., 8.6 miles.		302-638	gn. M.		Apr. 11, 1904	4415	do.	3	46474
Do.	Southwest Rock, Santa Barbara Island, N. 49° W., 4.7 miles.		323-448	dk. gn. M. R.		Apr. 12, 1904	4416	do.	2 ovig. ♀	46470
Off San Miguel Island.	San Miguel Island, S. 7° E., 9.8 miles.		264-271	gn. M.		Apr. 15, 1904	4436	do.	1 y. ♂	46516
Off Santa Cruz Island.	Gulf Islet, N. 21° W., 2.9 miles.		506-680	gn. M. bk. P. Sh.		Apr. 14, 1904	4429	do.	2 ovig. ♀	46469
Do.	Point San Pedro, N. 35° E., 7 miles.		447-510½	bk. M. R.		do.	4427	do.	1 ♂ 8 ovig. ♀ 8 ♂	46471 46473
Do.	Point San Pedro, N. 34° E., 10.3 miles.		764-891	gn. M.		do.	4428	do.	2 ♂	46472
Off Anacapa Island	33 49 45	119 24 30	603	gn. M.	38.9	Feb. 12, 1889	2980	do.	3 ♂ 1 ♀	15477
Northwest of San Nicolas Island.	33 33 00	120 17 30	534	gn. S. Glob.	38.9	Apr. 26, 1911	5695	do.	1 ♂ 2 y. 2 y.	55755 Amer. Mus.
Do.	33 24 36	120 12 30	640	gn. M.		do.	5694	do.	1 immat. ♀ 1 ♂ 1 y.	55752 Amer. Mus.
Off Santa Catalina Id.	Southeast point Santa Catalina Island, N. 19° 30′ E., 3.2 miles.		334-600	gy. S. R.		Apr. 9, 1904	4407	do.	8 ovig. ♀	46466

Material examined of Chionoecetes tanneri—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
California—Continued	° ′ ″	° ′ ″			°*F*						
Off San Clemente Island	33 08 00	118 40 00	414	gy. S.	41.4	May 8, 1888	2839	*Albatross*	1 lge. ♀, 13 small	21910	
Do	East point Northwest Harbor, N. 74° W., 5.8 miles.		542–599	gn. M	40	Apr. 8, 1904	4402	do	1♂ 2 ovig. ♀ 1 ovig. ♀ 3 ovig. ♀	46487 46465 46478	
Do	33 04 30	117 42 00	464	gn. M	46.5	Feb. 4, 1889	2937	do	1♂ 1♀	15482	
Do	32 50 20	118 03 30	500–507	gn. M	40.2	Apr. 8, 1904	4400	do	2♂	46464, 46518	
Do	32 44 00	119 32 00	776	gn. M. S	39.2	Apr. 13, 1896	3627	do	1♀	20127	
Off San Diego	32 40 30	117 31 30	822	gn. M	39	Jan. 19, 1889	2923	do	12♂ 5♀	15484	
Do	32 32 30	117 24 00	339	M	42.9	do	2925	do	1♂	15487	
Do	32 27 30	117 26 30	623	gn. M		Jan. 26, 1889	2929	do	1♂ 2♀	15480	
Do	Point Loma Lighthouse, N. 39° E., 9.6 miles.		67–116	gy. S. Sh.	48–49.9	Mar. 2, 1904	4305	do	1♂ 1♀	46476	
Do	Point Loma Lighthouse, N. 40° E., 13.4 miles.		549–585	gn. M	39	Mar. 14, 1904	4352	do	1 y. ♀	46515	
Do	Point Loma Lighthouse, N. 33° 30′ E., 13.6 miles.		514–541	gn. M. fne. S.	40	Mar. 9, 1904	4334	do	1 y. ♂	46517	
Lower California:											
Off Coronado Islands	South point North Coronado Island, N. 64° E., 5.4 miles.		641–666	gn. M	42.5	Mar. 18, 1904	4382	do	1 y. ♀	46593	
Off Cortes Bank	32 17 00	119 17 00	984	gy. M	38	Jan. 17, 1889	2919	do	1♀	15479	

Material examined of Chionoecetes angulatus

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No	Remarks
	Latitude N.	Longitude E.									
	° ′ ″	° ′ ″			°F						
Kamchatka: Off Avacha Bay.	Staritschkof Island, N. 43° W., 11.5 miles 52 37 30	158 50 00	682	gn. M. crs. bk. S. brk. Sh.	36.6	June 20, 1906	4797	*Albatross*	8♂ 13♀ (1 ovig. 1 shedding). 21 y.	43824, 43825, 46498.	
Alaska (Bering Sea):		*Long. W.*									
Pribilof Islands	56 57 30	170 33 00	49	gn. M. fne. S.	41	Sept. 2, 1893	3556	do	1♂	46638	
Southwest of Pribilof Islands.	56 12 00	172 07 00	1,625	gn. Oz.	35	Aug. 4, 1890	3308	do	20	15862	
Southeast of Pribilof Islands.	55 51 00	169 18 00	688	gn. M.	36.9	July 17, 1893	3501	do	60	18358	
South of Pribilof Islands	55 06 00	169 08 00	1,044	gn. M. fne. S.	35.8	Aug. 5, 1895	3601	do	5	19302	
Do	54 54 00	168 59 00	1,401	gn. Oz.	35.2	Aug. 12, 1895	3604	do	17	19303	1♂ is holotype.
		Long. E.									
Bowers Bank	54 33 30	178 44 00	584	gn. M. bk. sp. For.		June 4, 1906	4775	do	2 y	43820	
Do	54 33 00	178 45 00	557-584	gn. M. bk. sp. For.	37.2	do	4774	do	3 y. (1 soft shell)	43821, 46786	
Do	54 20 30	[1]179 09 30	764	gn. to br. M. fne. bk. S.	37	June 3, 1906	4768	do	3 y	43822	
		Long. W.									
North of Islands of Four Mountains, Aleutian Islands.	West point Yunaska Island, S. 37° E. 43.5 miles. 53 12 00	171 37 00	1,217	fne. bk. S.	35.2	May 29, 1906	4765	do	1♂	46541	
Do	53 55 00	170 50 00	1,033	gn. Oz.	35.4	Aug. 3, 1890	3307	do	1 lge 1 ovig. ♀	15861 17168	
North of Unalaska	54 11 30	167 25 00	987	gn. M. bk. lav. S.	35.9	Aug. 18, 1895	3607	do	25	19304	
British Columbia:											
Off Queen Charlotte Islands.	52 39 30	132 38 00	1,588	gy. Oz. crs. S.	35.3	Sept. 3, 1890	3342	do	14	15864	
Do	51 23 00	130 34 00	876	gn. M.	36.5	Aug. 31, 1888	2860	do	5♂ 2♀ 7 y	15478	
Washington: Off Gray's Harbor.	46 44 00	124 32 00	58	rky.	46.5	Sept. 23, 1888	2870	do	3 ♀	15474	
Oregon: Northwest of Cape Blanco.	Cape Blanco Light, S. 69° E., 30 miles. 43 01 00	125 12 30	1,064	gn. M.	35.9	Apr. 27, 1901	3788	do	1 ovig. ♀	33457	

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[1] Approximate position.

British Columbia (lat. 52° 39′ 30″ N.) southward to Oregon (lat. 43° 01′ 00″ N.). Depth, 49 to 1,625 fathoms.

Material examined.—See table, page 251.

Genus HYAS Leach

Hyas LEACH, Edin. Encyc., vol. 7, 1814, p. 431; type, *H. araneus* (Linnaeus).

Carapace broad, but still narrower than the postfrontal length, more or less lyrate or shield-shaped, tuberculate and pubescent. Rostrum triangular, flat, bifid, horns separated by a narrow slit or interspace. Eyes when retracted not entirely covered by the narrow supraocular eave; a fissure above and below the orbit; postocular cup formed by a large, triangular, flattened and acute tooth. A tubercle on the middle of the anterior surface of the eyestalk. Basal antennal article of good size, longer than wide; the next, or first movable, article laterally dilated; last article of peduncle, narrow, cylindrical. Chelipeds stout, chelae compressed. Ambulatory legs subcylindrical.

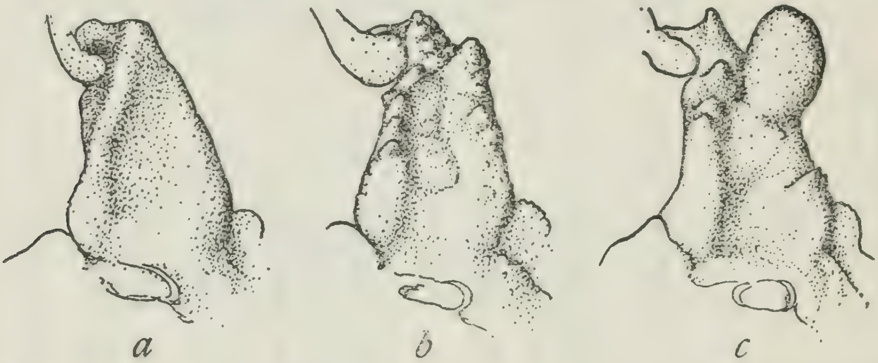

FIG. 90.—HYAS, LEFT BASAL ANTENNAL ARTICLE OF THREE SPECIES. *a*. ARANEUS, MALE (10031). *b*. COARCTATUS ALUTACEUS, MALE (40182). *c*. LYRATUS, MALE (15927)

Distribution.—Arctic Ocean with the exception of the Siberian coast between long. 147° E. and Kara Sea, and of the American coast between Baffin's Bay and Langton Bay, Northwest Territories; Bering Sea and North Pacific Ocean southward on the Asiatic side to Korea and perhaps Amoy, and on the American side to the State of Washington; North Atlantic Ocean southward on the American side to Cape Hatteras, and on the European side to the English Channel.

KEY TO THE AMERICAN SPECIES AND SUBSPECIES OF THE GENUS HYAS

A¹. Carapace subtriangular; hepatic region not dilated laterally. Basal antennal article subtriangular__________________________________**araneus**, p. 253.

A². Carapace lyrate; hepatic region dilated laterally forming, with the postorbital region, an alate expansion. Basal antennal article with sides nearly parallel.

B^1. Posterior angle of hepatic projection broadly rounded. Basal antennal article without a large tubercle at antero-external angle.

  C^1. Rostrum long; total carapace length is to rostrum length as 4.5:1 in medium specimens up to 6.4:1 in largest specimen.
coarctatus, typical, p. 258.

  C^2. Rostrum shorter and broader; total carapace length is to rostrum length as 7:1 in medium specimens up to 9.3:1 in large specimens.
coarctatus alutaceus, p. 258.

B^2. Posterior angle of hepatic projection subacute. Basal antennal article with bead tubercle at antero-external angle ________________ **lyratus**, p. 270.

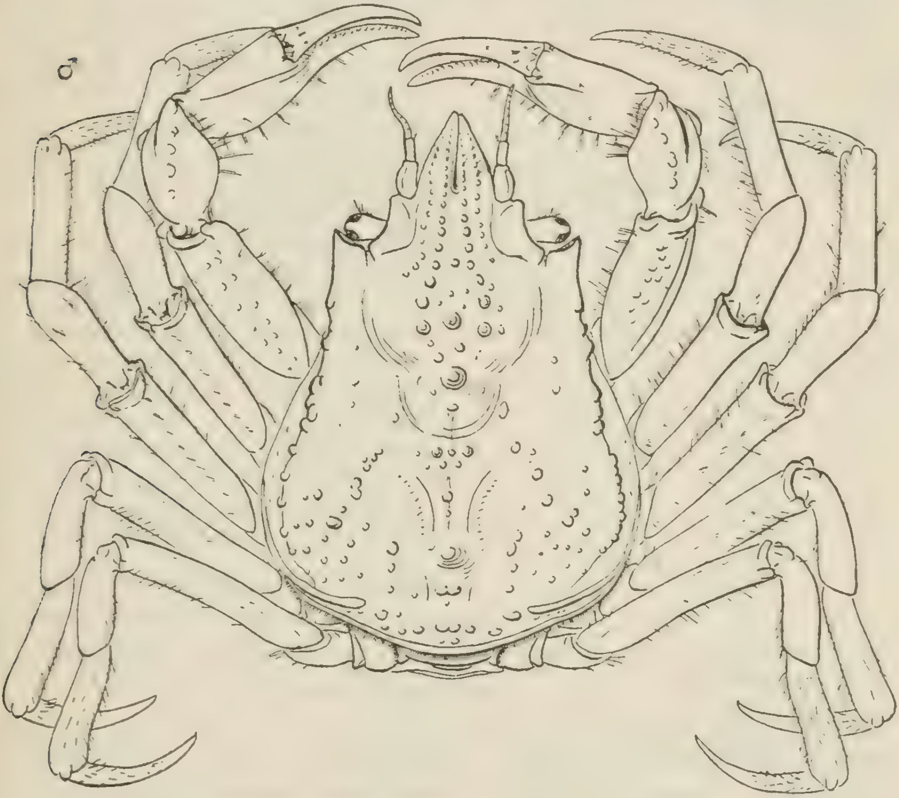

FIG. 91.—HYAS ARANEUS, MALE, DORSAL VIEW, × 1.55. (AFTER SMITH, MS.)

HYAS ARANEUS (Linnaeus)

TOAD CRAB. HARPER (Leach)

Plates 92 and 93

Cancer araneus Linnaeus, Syst. Nat., ed. 10, vol. 1, 1758, p. 628 (type-locality, *in Oceano Europaeo;* type not extant). Not *Cancer araneus* Herbst, Naturg. Krabben u. Krebse, vol. 1, 1785, p. 206.

Cancer bufo Herbst, Naturg. Krabben u. Krebse, vol. 1, 1790, p. 240 (wrongly 242), pl. 17, fig. 95 (type-locality, *in der Nordsee;* type in Berlin Mus.).

Inachus araneus Fabricius, Entom. Syst., Suppl., 1798, p. 356.

Maja bufo Bosc, Hist. Nat. Crust., vol. 1, 1802, p. 255.

Maja araneus Leach, Edin. Encyc., vol. 7, 1814, p. 394.

Hyas araneus LEACH, Edin. Encyc., vol. 7, 1814, p. 431; Malac. Podoph. Brit., 1816, pl. 21A, colored, and explanatory text.—RATHBUN, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 67, and synonymy; in Grenfell, Labrador, 1909, p. 481.—BIRULA, Annuaire Mus. Zool. Acad. Imp. Sci. St. Pétersbourg, vol. 11, 1906 (1907), p. 4.—HANSEN, Danish Ingolf-Exped., vol. 3, part 2, 1908, p. 13, except Brandt's and Stuxberg's records.—BIRULA, Mém. Acad. Imp. Sci. St. Pétersbourg, ser. 8, vol. 29, 1910, p. 4, pl. 1, fig. 1.—DONS, Tromsø Mus. Aarshefter 34, 1912–13, p. 146, pl. 1, figs. 1–13; pl. 2, figs. 1 to 8, 11; pl. 3, figs. 1 & 2, text-figs. A 1, 3, 5 & 7, B 1 & 1*a*, C; 37, 1914 (1915), p. 86. —VON HOFSTEN, K. Sv. Vet. Akad. Handl., vol. 54, 1916, p. 63.

Hyas coarctatus, var., HOEK, Niederl. Archiv f. Zoologie, Suppl. vol. 1, Lief. 3, 1882, p. 3, pl. 1, fig. 1.

Hyas coarctata STUXBERG, Vega-Exp. Vetensk. Iakt., vol. 5, 1886, p. 51.

Hyas araneus, var. *hoeki* BIRULA, Annuaire Mus. Zool. Acad. Imp. Sci. St. Pétersbourg, vol. 2, 1897, p. 442 [38] (type-locality, White Sea, 3–100 fathoms; type in Petrograd Mus.); vol. 4, 1899, p. 37 [18], text-fig. 3.

Hyas araneus hoeki BIRULA, Mém. Acad. Imp. Sci. St. Pétersbourg, ser. 8, vol. 29, 1910, p. 3, and synonymy.

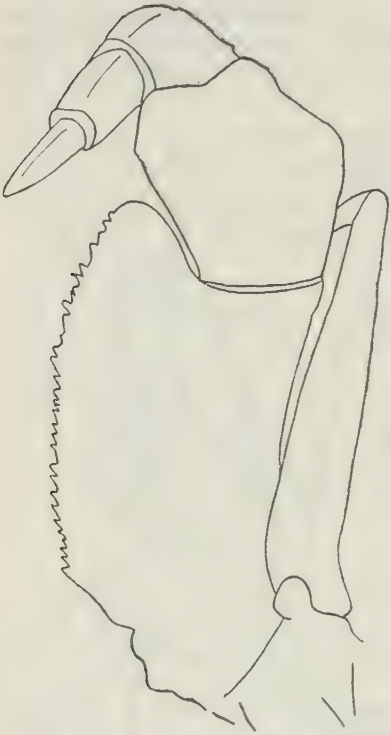

FIG. 92.—HYAS ARANEUS (10031), MAXILLIPED, × 2.85

Diagnosis.—Carapace subtriangular; hepatic region not dilated laterally. Basal antennal article subtriangular, narrowing anteriorly (fig. 90, *a*).

Description.—Carapace very convex antero-posteriorly, strongly deflexed in front of the middle of the gastric region. Rostral horns contiguous. Lateral margins of carapace tuberculate behind the postorbital tooth, converging anteriorly throughout their length, or in small specimens the margins of the postorbital teeth may be parallel; marginal line interrupted between hepatic and branchial regions by a small, shallow sinus. Surface uneven, ornamented with pustulate tubercles, especially on the median gastric area and in an oblique row on each branchial region; on the intestinal region two tubercles side by side which may in small specimens be united in one. Basal article of antenna subtriangular, narrowing anteriorly, margins thick.

Chelipeds in old male stout, fingers thick, slightly compressed, fingers very narrowly gaping when closed; first ambulatory leg longer than cheliped.

Color.—The dorsal surface except of the fingers a dull purplish red, ventral surface chiefly buff, according to Leach's figures.

Material examined of Hyas araneus

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			° F						
Greenland:											
Exact locality not given								Dr. Pavy, Howgate Exped.	2 lge. ♀	3571	
Godhavn Harbor, Disco Island.						July, 1883		H. G. Dresel	2♀	14990	
Godthaab						1878		L. Kumlien	1♂	19332	
Davis Straits			30			Aug., 1879		N. P. Scudder, U. S. Fish Comm.	1♀	40180	On trawl.
Labrador:											
Outside of Hebron			60	G		Aug. 25, 1908		Owen Bryant	2	38449	
Off Fish Island			75	M		do		do	1	38451	
Nain			7	M		Aug. 18, 1908		do	1	38450	
Gready Harbor			12			1908		do	1♀	38452	
L'Anse au Loup and Forteau Bay.			15–25	S. Kelp, Dirt		1882		Winifred A. Stearns.	3♂ 2♀ 10 y.	5242, 10031	
Labrador								W. Henry	1 lge. ♂	16280	
Do						Nov., 1882		L. M. Turner	1♂ 1♀	5844	
Quebec:											
Anticosti Island								J. Schmitt	2♀	26194	
Godbout								N. A. Comeau	1♀	43666	
Newfoundland:											
St. Johns						1885		*Albatross*	4♂	10138	
Off St. Lawrence Harbor, Placentia Bay.			50	rky		Sept. 29, 1908		Owen Bryant	1	38448	
Grand Bank of Newfoundland.								Sch. *Victor*	2♀	3781	Gloucester donation to U. S. Fish Comm.
Do								N. P. Scudder	1♂	40181	
Do	46 20 00	49 52 00	40	brk. Sh	35.3	June 25, 1885	2446	*Albatross*	59	10226	
Do	46 09 30	49 48 30	39	brk. Sh	33.5	do	2445	do	32	10225	
Do	45 59 00	49 45 30	39	wh. S. brk. Sh	34.4	do	2444	do	3♂ 5♀	10224	
Do	47 04 00	50 48 00	89	fne. gn. S	29.7	June 26, 1885	2452	do	3 lge. ♂	10229	
Do	43 36 00	50 05 00	37	crs. brk. Sh. brk. St.	35.8	June 21, 1885	2437	do	1	10220	
Do	43 36 00	50 03 50	37	gn. S. bk. Sp. brk. Sh.	36.8	do	2438	do	3	10221	
Do	43 37 00	49 56 30	36	wh. S. bk. Sp	37.8	do	2439	do	2♂ 8♀	10222	
Do	43 00 00	50 47 30	129	yl. S. bk. Sp	33.5	June 23, 1885	2431	do	2♀	10218	
Green Bank	45 35 00	55 01 00	67	bk. gy. S	30	July 3, 1885	2465	do	4♂ 4♀	10233	

Material examined of Hyas araneus—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
Newfoundland—Contd.	° ′ ″	° ′ ″			°*F*						
St. Peters Bank								Sch. *Notice*	1 y	14456	Gloucester donation to U. S. Fish Comm.
Do	45 29 00	55 24 00	67	Co	30	July 3, 1885	2466	*Albatross*	15	10234	
Do	45 23 00	55 41 00	38	fne. wh.S.bk. Sp.	35.8	do	2467	do	6♀ 3	10235 10236	From cod stomach.
Do	45 11 30	55 51 30	42	fne. bk. S	33	do	2468	do	7	10237	
Do	45 07 00	55 09 00	90	gy. S. bk. Sp. P.		Aug. 22, 1885	2698	do	1	11867	
Do	45 04 00	55 23 00	72	Co		do	2699	do	25♂ 20♀	11868	
Do	44 56 00	55 49 30	75	gy. S. bk. Sp.		do	2701	do	1	11870	
Banquereau:			50					Sch. *Mystic*	4♂ 1♀	3784	Gloucester donation to U. S. Fish Comm.
East of Banquereau	44 27 30	57 10 45	137	crs. S. G	40	July 4, 1885	2472	*Albatross*	1	10238	
Do	44 28 30	57 10 45	133	hrd	40	do	2474	do	1♂	10239	
South of Banquereau	44 09 00	58 03 00	250–350					Sch. *Mary F. Chisholm.*	1♀	3790	Do.
Misaine Bank	45 27 30	58 27 45	50	G. P		July 6, 1885	2490	*Albatross*	1	10240	
Do	45 22 00	58 43 45	75	wh. S	33.3	do	2492	do	16	10241	
Do	45 07 30	59 27 45	44	crs. yl. S. P	32.2	do	2496	do	3♂ 1♀	10245	From cod stomach.
Between Middle Ground and Halifax, Nova Scotia.	44 22 30	61 00 15	47	P	35	July 7, 1885	2503	do	11♂ 14♀	10247	Do.
Gulf of Maine								U. S. Fish Comm.	6 y	3826	
Do						1871		do	1	35306	
Casco Bay, Maine:											
West of Haskells Island			5			Aug. 14, 1911		Rathbun and Dandridge.	1♂ 3 y	43162 43163	
Northeast of Eagle Island.			6.5			do		do	1♂ 1♀	43730	
Massachusetts:											
Gloucester Outer Harbor.			8–10			1878	141–146, 201, 202	*Speedwell*	2♂ 3♀	2867	
Off Cape Cod						1879		U. S. Fish Comm.	1♂ 3♀	3919	

North of Cape Cod	Race Point Light, S. 9° W., 5¼ miles. 42 09 00	70 13 00	30	crs. S		July 25, 1879	249–250	*Speedwell*	4♂	3978	
Mouth of Cape Cod Bay.	42 04 45 to 42 04 30	70 16 00 to 70 16 15	30–31	fne. gy. S	38–40	Aug. 11, 1879	290, 291	do	3 y	3968	
Cape Cod Bay	Race Point Light, N. 10° E., 1¾ miles.		26.5	bu. M	44.8	Aug. 30, 1879	319	do	3♂ 2♀	3932	
Do	Billingsgate Light, S. 63° E., 5¾ miles. 41 55 00	70 10 00	15	bu. M	48.2	Sept. 15, 1879	358	do	1♂ 4♀	3929	
Do	Wood End Light, N. 19° E., Rocky Point, N. 74° W. 41 52 30	70 15 00	18	.	64.5	July 21, 1879	240	do	1 ovig. ♀	3933	
Do	Manomet Point, N. 68° W., 9 miles. 41 51 30	70 21 30	15.5	gn. M. S	48	Sept. 9, 1879	341	do	2♂ 2♀	3931	2 encrusted with *Balanus*.
Crab Ledge, off Chatham.	Chatham Lights, NW. by W., 6 miles.		15	S. G	53	Aug. 30, 1881	965	*Fish Hawk*	1♀	18777	Decorated with foreign substances.
Do			16–18			do	967–969	do	1♀	46462	
Rhode Island: Off Watch Hill.			17–21			Aug. 21, 1874		U. S. Fish Comm.	1♂	40757	
New England coast								S. M. Johnson & Co.	1♂, very large	3319	
Spitzbergen: Bjonens Bay	79 45 00	*Long. E.* 8 00 00	7–10			Aug. 10, 1881		Doctor Eckstein, U. S. N., U. S. S. *Alliance*.	2♂	4514	
Hebrides								A. M. Norman	1♀	6317	
Helgoland								Roy. Biol. Sta., Helgoland.	1♂ 1♀	19896	
Germany:											
Kiel Harbor								Karl Möbius	1♀	3304	
?Germany									1♂ 1♀	32362	From German Educational Exhibit, Louisiana Purchase Exposition, 1904, through U. S. Bureau of Fisheries.
North Sea									1	Berlin Mus.	Type of *Cancer bufo* Herbst.

Measurements.—Male (10229), extreme length of carapace 72.4, width 54 mm. Largest male examined (3319), length 94, width 72 mm. Male, Iceland, length 110, width 86 mm. (Hansen).

Range.—West coast of Greenland from lat. 69° 15′ to 64° 11′ N. (Hansen); from Labrador at Hebron, about lat. 58° 20′ N., southward to Rhode Island. East coast of Greenland (Dons); Iceland; Northern Europe; Arctic Ocean from Spitzbergen eastward to about 60° E., in Kara Sea. ? Atka, Aleutian Islands (Birula, 1910).

Shallow water to 500 meters (273 fathoms), according to Dons.

Material examined.—See table, pages 255–257.

HYAS COARCTATUS Leach

HYAS COARCTATUS ALUTACEUS Brandt

HYAS COARCTATUS URSINUS Rathbun

TOAD CRAB

Plates 94–97

Hyas coarctatus Leach, Trans. Linn. Soc. London, vol. 11, 1815, p. 329 (type-localities, *in mari Britannico; apud Frith of Forth, Plymouth Sound et Salcombe;* supposed types in Brit. Mus., but label incomplete [36]); Malac. Podoph. Brit., 1816, pl. 21B.—Smith, Rept. U. S. Fish Commr., vol. 1, 1871–72 (1873), p. 548 [254].—Rathbun, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 69, and synonymy; in Grenfell, Labrador, 1909, p. 481; Rept. Canad. Arc. Exped., 1913–18, vol. 7, pt. A, 1919, p. 9A.—Birula, Annuaire Mus. Zool. Acad. Imp. Sci. St. Pétersbourg, vol. 11, 1906 (1907), p. 8.—Hansen, Danish Ingolf-Exped., vol. 3, pt. 2, 1908, p. 15.—Dons, Tromsø Mus. Aarshefter 34, 1912–13, p. 158, pl. 1, figs. 14–19; pl. 2, figs. 9–10; pl. 3, figs. 3–8, text-figs. A2, 4, 6 and 8, B2 and 2*a*, and synonymy except *H. lyratus*; 37, 1914 (1915), p. 88.

Lissa fissirostra (by error, *fssirostra*) Say, Journ. Acad. Nat. Sci. Philadelphia, vol. 1, 1817, p. 79 (type-locality, coast of Long Island; type not extant).

Hyas coarctata Milne Edwards, Hist. Nat. Crust., vol. 1, 1834, p. 312; R. Anim. de Cuvier, disciples ed., p. 90, pl. 32, fig. 3.—Birula, Annuaire Mus. Zool. Acad. Imp. Sci. St. Pétersbourg, 1897, p. 445 [41].

Hyas serratus Hailstone, Mag. Nat. Hist., vol. 8, 1835, p. 262 (type-locality, near Hastings, England, in trawl net; type not extant).

Hyas bufonius White, List Crust. Brit. Mus., 1847, p. 6 (locality not given; type in Brit. Mus.).

Hyas coarctatus, var. *alutacea* Brandt, in Middendorff's Reise in den Äussersten Norden und Osten Sibiriens, vol. 2, Zool., pt. 1, 1851, p. 79 (type-locality, Bear Island, near the Schantar Islands, Okhotsk Sea, Siberia; type in Petrograd Mus.).

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[36] Dr. Calman, of the British Museum, under date of January 23, 1923, writes: "There are in our collection a number of old dry specimens of *Hyas coarctatus* which according to the 'List of British Animals,' part 4, Crustacea, 1850, came 'from the collection of Dr. Leach,' but curiously enough their origin is not stated in the museum register and I suspect some confusion has taken place in the labels of the specimens themselves. The result is that although it is probable that some of them might be ranked as the syntypes of the species, I am not confident that I can tell which they are I do not think it likely that types exist in any other museum."

Hyas latifrons Stimpson, Proc. Acad. Nat. Sci. Philadelphia, vol. 9, 1857, p. 217 [24] (type-locality, *in Mari Beringiano;* types, Cat. No. 2100, U. S. N. M.); Smithson. Misc. Coll., vol. 49, 1907, p. 9, pl. 2.

Hyas coarctatus, var. *latifrons* Bražnikov, Mém. Acad. Imp. Sci. St. Pétersbourg, ser. 8, vol. 20, 1907, No. 6, p. 43.

Hyas coarctatus alutaceus Birula, Mém. Acad. Sci. St. Pétersbourg, ser. 8, vol. 29, 1910, p. 4, pl. 1, figs. 2–5.

Hyas coarctatus forma alutacea Dons, Tromsø Mus. Aarshefter 37 (1914), 1915, p. 86, footnote.

Hyas coarctatus ursinus Rathbun, Proc. U. S. Nat. Mus., vol. 64, art. 14, 1924, p. 4 (type-locality, Sea of Japan, 325 fathoms; holotype, female, Cat. No. 46493, U. S. N. M.).

Diagnosis.—Carapace lyrate; postorbital and hepatic regions dilated laterally, forming a winglike expansion with a rounded, posterolateral angle. Basal antennal article narrowing anteriorly but not triangular, and without large tubercle (fig. 90, *b*).

Description.—The hepatic and postorbital regions are dilated laterally and form an expansion with a broadly rounded posterolateral margin, which is separated by a broad and deep sinus from the branchial region. The tubercles of the lateral margin extend forward only to the posterior part of the hepatic region. The basal article of the antenna narrows a little forward, its thickened side margins are granulate, the outer margin terminating forward in a distinct although blunt tooth.

The ornamentation of the carapace is similar to that of *H. araneus*. On the mesogastric region two large median tubercles, on the urogastric region two others side by side. In the old the carapace is rougher than in *araneus*, and the chelipeds more roughly granulate. The rostral horns may be contiguous or diverge narrowly or have a buttonhole gape, meeting only at the tips. The chelipeds may attain or exceed the length of the legs of the first pair.

Color.—According to Leach's figures, the color is similar to that of *H. araneus*, but the red of carapace and chelipeds is more restricted. Dusky brick-red above, whitish below (Stimpson, as *latifrons*).

Variations.—In the course of its range, the species shows great variation. The typical form is of relatively small size, has a long rostrum in proportion to length of carapace; rostrum contained in total carapace length 4.5 times in specimens of medium size, to 6.4 times in the largest (Birula). The form called *alutacea* by Brandt and later *latifrons* by Stimpson has a shorter, broader rostrum, its length contained in total carapace length 7 times in specimens of medium size, to 9.3 times in large specimens. The anterior third of the carapace, embracing the hepatic regions, is wider in *alutaceus* than in typical *coarctatus*; the tubercles of the carapace are less strongly marked.

Material examined of Hyas coarctatus

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
Greenland:	° ′ ″	° ′ ″			°F						
Off Hare Island	70 20 00	56 00 00	90			June 12, 1884		C. S. McClain, Ensign, U. S. N., U. S. S. *Alert.*	1 y	13759	*alutaceus*, var; horns narrow.
Disco Harbor						July, 1883		H. G. Dresel, Ensign, U. S. N., Greely Relief Exped.	1	13988	*alutaceus.*
Greenland								Dr. Pavy	1 lge. ♂	5239	Do.
Davis Strait								N. P. Scudder, U. S. Fish Comm.	1 y	46676	Do.
Hudson Bay: Near Egg Island.			(1)			Aug. 17, 1900		E. A. Preble, Biol. Survey.	1 ♀	26351	Do.
Labrador:											
South shore Hudson Strait.						1897		Wm. Wakeham	2	21459	Do.
Ungava Bay						1897		*Diana*, Hudson Bay Exped.	1 ♂	Ottawa Mus.	Do.
20 miles south of Nain						Aug. 15, 1908		Owen Bryant	8	38457	Do.
1 mile north of Battle Harbor.			50	fne. S		Sept. 14, 1908		do	1 ♂	38456	Do.
Henley Harbor			(2)			1882		W. A. Stearns	3 ♀	5240	Do.
Newfoundland:											
Off St. Lawrence Harbor, Placentia Bay.			50	rky		Sept. 29, 1908		Owen Bryant	1	38454	Do.
Flemish Cap	46 52 30	44 54 30	86	gy. S. bk. Sp.		Aug. 11, 1886	2694	*Albatross*	4	11873	Typical.
Do	46 50 00	44 35 00	73	gy. S. sm. bk. St.		do	2692	do	1 y	11872	Do.
Grand Bank	47 29 00	52 18 00	86	G		July 2, 1885	2456	do	3 ♂	10209	*alutaceus.*
Do	47 21 00	51 38 30	81	br. S	30	June 26, 1885	2455	do	1 ♂ 2 ♀	10208	Do.
Do								N. P. Scudder, U. S. Fish Comm.	1 ♂	40182	Do.
Green Bank	45 50 00	54 06 00	67	gy. S. Sh	30	July 3, 1885	2460	*Albatross*	1 ♂ 1 ♀	10212	Do.
Do	45 44 00	54 27 00	45	brk. Sh	30	do	2463	do	1 ♀	10213	Do.
St. Peters Bank	45 29 00	55 21 00	67	Co	30	do	2466	do	1 ♀	16287	Do.

Nova Scotia:											
Arichat Harbor, Cape Breton, in cod stomach.			30			Sept., 1890		W. A. Stearns	1	15289	Do.
Misaine Bank	45 27 30	58 27 45	50	G. P		July 6, 1885	2490	*Albatross*	4	10214	Do.
Do	44 54 00	59 46 45	65	fne. br. S		do	2498	do	1	10215	Do.
Sable Island Bank, in cod stomach.	44 22 30	61 00 15	47	P	35	July 7, 1885	2503	do	5♂ 10♀	10216	Near typical; rostrums varying in length.
Off Halifax	44 30 00	63 18 00	43	crs. S	31.8	July 8, 1885	2509	do	1♀	10217	Typical.
Do	Sandwich Point, Halifax Harbor, W. ½ N., ⅓ mile.					Sept. 4, 1877	74	*Speedwell*	1	2700	Near typical; horns narrow, not very long.
Barrington Pass			3½–9			June – July, 1910.		Geol. Surv. Canada.	1♂ 1♀	41887	Typical.
Browns Bank, off Cape Sable.			40	rky. sdy		Oct. 8, 1908		Owen Bryant	2 y	38453	Do.
Do			45			do		do	3 y	38455	Do.
La Have Bank	42 56 00	64 51 00	45	G. St	36	Sept. 12, 1872	86	*Bache*	4	3942	Do.
Do	42 46 00	66 27 00	75	fne. sdy. M		Aug. 20, 1877	40	*Speedwell*	1♀	2702	Typical; tips of rostrum broken off.
Do	42 27 00	66 00 45	80	S. G. brk. Sh	44.5	May 16, 1883	2065	*Albatross*	1♀	5801	Typical.
Do	41 13 00	66 00 50	906	bu. M		Sept. 4, 1883	2076	do	1	5809	Do.
New Brunswick:											
Grand Manan						1872		U. S. Fish Comm	1 y. ♀	38018	Do.
Do						1872		H. E. Webster	4	3921	Typical; rostrum of largest specimen not very long.
Do			3–25			Aug. – Sept. 1898		M. J. Rathbun	10 sm	21689	Typical.
West of Grand Manan			40–55			1872		U. S. Fish Comm	1 ovig. ♀	40753	Do.
Maine:											
Off Monhegan			60			Aug. 2, 1912	21	*Grampus*	1	46002	Do.
Off Seguin			17			July 26, 1912	16	do	1♂ 1♀	45998	Do.
West of Haskells Island, Casco Bay.			5			Aug. 14, 1911		Rathbun & Dandridge.	2y	43164	Do.
Mouth of Casco Bay			30			July 24, 1912	15	*Grampus*	2♀	45999	Do.
Cashes Ledge								U.S. Fish Comm	1 y	40192	Near typical; carapace very wide across hepatic regions.
Do	42 49 00	68 50 00	52–90	rky	43	1873	21	*Bache*	10	3878	Typical.
Massachusetts:											
Off Thatchers Island			73–75	fne. S.	40	Aug. 16, 1878	163 164	*Speedwell*	2	2594	Do.
Do			29	stony, Sp. G	47.5	Sept. 2, 1878	196	do	10	2593	Do.
Do	East Light, NW. ⅛ N., 13½ miles		98	muddy	39.25	do	199	do	1	2581	Do.
Off Eastern Point			45	M	42.25	Aug. 29, 1878	184	do	1♂ 3♀	2865	Do.

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[1] Beach, high-water mark.

[2] Shallow.

Material examined of Hyas coarctatus—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
Massachusetts—Contd.	° ′ ″	° ′ ″			°*F*						
Off Cape Ann			57–68			Sept. 17, 1878	210–214	*Speedwell*	6	2599	Typical.
Gloucester, off shore								Mar. Biol. Lab., Woods Hole.	1♂	46186	Do.
Massachusetts Bay	42 30 00 Thatchers Island Light, NW. ¼ N., 13½ miles; Halfway Rock, W. by N., 20 miles.	70 20 00	90	M	38.5–39	Aug. 14, 1877	32	*Speedwell*	3	2703	Do.
Nahant						June, 1912		A. S. Pearse	1♂	45587	Do.
Near Boston Lightship			30			July 13, 1912	6	*Grampus*	1♂	46004	Do.
Off Cape Cod	42 09 30 Cape Cod Light, S. 30° W., 8 miles.	69 57 00	73	G		July 29, 1879	265	*Speedwell*	3♂ 1♀	3997	Do.
Do	42 08 30	70 13 00	30	crs. S		July 25, 1879	249–250	do	12♂ 6♀	3947	Do.
Do	Off South end Stellwagens Bank.		26–28		41.8–42.8	Sept. 6, 1879	329–334	do	26	3970	Near typical; rostrums varying in length.
Do	42 03 30 Race Point Light, N. 86° E., 6¾ miles.	70 23 00	26	gn. M.	39	Aug. 11, 1879	294	do	1♀	3998	Typical.
Do	42 03 00 Cape Cod Light, S. 88° W., 30 miles.	69 22 00	106	gy. M		Sept. 18, 1879	360	do	1♂ 1 y	40752	Do.
Do	41 35 30 Chatham Light, N. 75° W., 12 miles.	69 42 00	18	speckled S		Sept. 19, 1879	370	do	20 sm. ♂ ♀	3958	Do.
Do	41 35 30 Chatham Light, N. 72° W., 16 miles.	69 35 00	34.5	crs. speckled S		do	371	do	2 y 1 y	40754 37964	*alutaceus*, shape of. A very early crab stage.
Do	Off Chatham		16–18		50.5–52	Aug. 30, 1881	967–969	*Fish Hawk*	9♂ 9♀ 7 y	4554	Typical.
Do	Chatham Lights, W. NW. ½ W., 6½ miles.		16	S. G. St	51	do	974	do	2♂ 5♀	4555	Do.
Do	Chatham Lights, W. NW. ⅝ W., 6 miles.		16	S. G. St	52	do	976	do	6♂ 6♀	39944	Do.

Do	Chatham Lights, NW. by W. ¼ W., 5¾ miles.		14	S. St. P	53	do	980	do	1 ♂	46626	Do.
Do	Off Chatham 41 31 00	69 28 00	33	M. S	41.5	do	984	do	7	40711	Near typical; rostrums varying in length.
Do	Off Chatham		33-43			do	981-984	do	50 ♂ ♀	3349	Typical.
Do			28-90		37-40	Aug. 2 and 3, 1882	1080-1088	do	6	14568	Do.
Vineyard Sound	Vicinity of Woods Hole							V. N. Edwards	2 y. ♀	32484	Do.
Do						1911		M. J. Rathbun	3	32485	Do.
South of Marthas Vineyard.	41 00 00	70 49 00	26	S	50	Sept. 7, 1881	985	*Fish Hawk*	1 ♀	4556	Do.
Do	40 20 00	70 35 00	55	sft. M	44	Aug. 23, 1883	1159	do	1 y. ♂	6506	Do.
Do	40 14 00	70 29 15	62	sft. M	45	do	1157	do	2 ♂	5801	Do.
Do	40 03 00	70 38 00	89	gy. S	49	Aug. 22, 1882	1109	do	1 ♀	4744	Do.
Do	40 02 00	70 45 00	89	fne. S	48	do	1117	do	1 ♀	4743	Do.
Do	40 02 18	70 23 06	192	fne. S	50	Sept. 4, 1880	869	do	1 y	34016	A very early crab stage.
Southeast of Nantucket	40 46 30	69 50 15	18	fne. S. bk. Sp.	55.9	Sept. 27, 1884	2255	*Albatross*	1 ♂	8660	Typical.
Do	40 38 30	69 29 00	30	yl. S	52.9	Sept. 28, 1884	2256	do	2 ♂ 3 ♀	7169	Do.
Do	40 34 30	69 50 45	32	gy. S. bk. Sp	52.9	Sept. 27, 1884	2253	do	1 y	8733	Do.
Do	40 26 00	69 29 00	36	gy. S. bk. Sp	51.2	Sept. 28, 1884	2258	*Albatross*	3 y. ♂ 1 y. ♀	7168	Do.
Do	39 54 00	69 44 00	158	fne. S	45	Aug. 11, 1882	1097	*Fish Hawk*	1 ♀	4745	Do.
Georges Bank						1872		Smith & Harger	2	35305	Do.
Do							(3)	Sch. *Clytie*	1 ♀	3726	Do.
Do	42 01 00	68 00 30	86	crs. S. bk. Sp. brk. Sh.	57	Aug. 30, 1883	2057	*Albatross*	9	5796	Do.
Do	42 00 00	67 42 00	45	crs. S		1872	93, 94	*Bache*	7	3838	Do.
Do	41 23 00	68 47 00	70	fne. dk. gy. S	42.2	Sept. 4, 1885	2579	*Albatross*	15	10791	Do.
Do	41 25 00	66 24 48	50	S. Sh	45	Aug. 31, 1872	82	*Bache*	1 y	40756	Do.
Do	41 10 20	66 30 20	50	wh. S. bk. Sp	46	Sept. 4, 1883	2081	*Albatross*	6 ♂ ♀	5805	Do.
Do	41 09 50	66 31 50	49	crs. yl. S	46.5	do	2082	do	10 ♂ ♀ 4 ♂	5808 39943	Do.
Northeast of Georges Bank.	42 17 00	66 37 15	150	S. G.	42	Aug. 31, 1883	2062	do	1	5799	Do.
Do	42 05 00	66 46 15	41	bu. M. S		do	2059	do	2	5798	Do.
East of Georges Bank	41 49 00	65 49 30	72	S. G. brk. Sh	43.6	July 13, 1885	2525	do	2 y	10248	Do.
South Channel							(4)	Sch. *Sultana*	24 ♂ ♀	3698	Do.
Rhode Island:											
Off Newport	Point Judith, NW. by W. ¾ W., 2¼ miles.		16½	sft. M. crs. S	55	Aug. 14, 1880	797	*Fish Hawk*	1 y	40755	Do.
Off Watch Hill			17-21			Aug. 21, 1874			3 y	40751	Do.
Virginia:											
East of Hog Island Light	37 30 48	74 51 24	18	fne. S. Sh	45.5	May 5, 1883	2017	*Albatross*	1 y	6376	Do.
Outside of Cape Henry						July 10, 1892	5135	*Grampus*			
East of Pleasant Ridge	36 41 15	74 39 50	66½			Apr. 30, 1883	2012	*Albatross*	2 y. ♀	5571	Do.
Do	36 41 05	74 38 55	373	gn. M. fne. S		May 1, 1883	2014	do	1 y. ♀	5589	Do.
North Carolina:											
East of New Inlet	35 43 00	74 53 30	45	gy. bk. S		Oct. 21, 1884	2308	do	1 ♀	8860	Do.

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[3] Gl. Don. 931.

[4] Gl. Don. 787.

Material examined of Hyas coarctatus—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°*F*						
Arctic Alaska:[5]											
Cape Smyth			([6])			1882–83		Point Barrow Exped., U. S. Sig. Service.	3♂	7852	*alutaceus.*
Southwest of Cape Smyth.	71 02 00	157 46 00	19			Aug. 24, 1884		U. S. R. S. *Corwin.*	1♂ 6♀ 1 y	14730	Do.
10 miles W. of Point Franklin.			13½	S		Aug. 31, 1883		Pt. Barrow Exped.	1♀	7878	Do.
Off Icy Cape	70 24 00	161 25 00	9–10	M. P		Aug. 19, 1913	23	Canad. Arc. Exped.	4♂ 4♀	54166	Do.
Off Cape Sabine			13	G		Aug. 24, 1880		W. H. Dall	1♂ 1♀	14738	Do.
Off Point Hope			25			July 13, 1884		Capt. M. A. Healy, U. S. R. S. *Corwin.*	3♂	14729	Do.
Arctic Ocean						1880		U. S. R. S. *Corwin.*	1♂ 2♀ 2 y	14732	Do.
Do								N. Pac. Expl. Exped.	1♂	1236, M.C.Z.	*alutaceus;* labeled "*H. latifrons*" by Stimpson.
Off Kotzebue Sound	66 45 0	166 35 00	10	S		Aug. 19, 1880		W. H. Dall	1♂ 1♀	14743	*alutaceus.*
North of Cape Prince of Wales.	66 07 00	168 26 37	31			June 14, 1884		U. S. R. S. *Corwin.*	7♂ 3♀ 5 y	14728	Do.
Off Cape Prince of Wales			23	M		1874		W. H. Dall	1♂ 3♀	14739	Do.
Do	65 49 15	169 04 30	26			June 14, 1884		Capt. M. A. Healy, U. S. R. S. *Corwin.*	1 y. ♂	13590	Do.
Bering Strait			13	G		1880		W. H. Dall	1♂ 1 y	14737	Do.
Bering Sea (Alaskan side):											
Bering Sea								Wm. Stimpson, N. Pac. Expl. Exped.	4♂ 4♀	2100	*alutaceus;* types of *H. latifrons* Stimpson.
12 miles east of King Island.			17	M		1874		W. H. Dall	1♂ 3♀ 1 y	14741	*alutaceus.*
St. Lawrence Island						1912		Riley D. Moore	2♂ 2♀	46099	Do.
Southeast of St. Lawrence Island.	62 54 00	166 38 00	22			June 14, 1884		Lieut. Geo. M. Stoney, U. S. N.	2♂	14734	Do.
Norton Sound	63 37 00	165 19 00	12			June 15, 1884		do	1♀	14735	Do.
Between Nunivak Island and St. Matthew Island.	60 22 00	168 45 00				1884		do	1♀	14733	Do.

Do	60	06	00	171	25	00	37	bk. M. fne. S	31. 1	Aug. 3, 1893	3519	*Albatross*	1 ♀	18338	Do.
Between St. Matthew Island and Pribilof Islands.	58	19	30	172	02	00	55	dk. gn. M. fne. S.	35. 9	Aug. 5, 1893	3528	do	1	18344	Do.
Do	58	36	00	172	21	00	56	gn. M	36. 1	do	3529	do	6	18345	Do.
Do	59	39	00	173	53	00	59	dk. gn. M. fne. S.	34. 9	Aug. 6, 1893	3530	do	14	18346	Do.
Between Nunivak Island and Pribilof Islands.	59	22	00	168	21	00	21	fne. gy. S	40. 8	Aug. 2, 1893	3514	do	1 ♂	18337	Do.
Do	58	27	00	169	01	60	35	fne. S. gn. M		Aug. 1, 1893	3513	do	1	18336	Do.
Northeast point, St. Paul Island.										July 20, 1922		E. C. Johnston	1 y. ♀	56308	Do.
Pribilof Islands	St. George Island									May 2, 1914		G. D. Hanna	1 ♂ 1 ♀	48289	Do.
Do	57	58	00	170	09	00	41	crs. gy. S. G	35. 7	Aug. 4, 1893	3522	*Albatross*	13	18339	Do.
Do	57	49	30	169	27	00	38	fne. S. gn. M	36. 6	Aug. 1, 1893	3512	do	7	18335	Do.
Do	57	48	00	171	21	00	52	gn. M	38	Aug. 5, 1893	3527	do	1 ♂	18343	Do.
Do	57	39	00	170	02	00	39	gn. M. fne. S	38	Aug. 4, 1893	3523	do	10	18340	Do.
Do	57	31	00	170	57	00	49	dk. M. fne. S	38. 9	Aug. 5, 1893	3526	do	1 ♀	18342	Do.
Do	57	32	00	169	38	00	39	fne. S. dk. M	37. 2	Aug. 1, 1893	3511	do	15	18334	Do.
Do	57	24	00	169	56	00	36	gy. S. P	40. 3	Aug. 4, 1893	3524	do	25	18341	Do.
Do	57	18	00	170	42	00	42	gn. M. fne. S	38. 9	July 12, 1893	3482	do	4	18324	Do.
Do	57	18	00	171	54	00	60	bu. M	37. 4	do	3484	do	2	18325	Do.
Do	57	12	30	169	51	00	27	Sh. bk. S	40. 1	Aug. 1, 1893	3510	do	22	18333	Do.
Do	57	09	00	168	17	00	44	fne. gy. S	38. 1	July 28, 1893	3505	do	1 ♂ 4 ♀	18329	Do.
Do	57	07	30	170	28	15	33	G	38. 7	July 18, 1896	3638	do	1 ♀	20153	Do.
Do	57	06	30	170	28	00	32	crs. G	39	do	3637	do	1 y	20152	Do.
Do	57	06	30	170	22	30	20	fne. gy. S. Sh		Aug. 3, 1891	3438	do	3	17077	Do.
Do	57	06	00	170	35	00	41	fne. bk. S	44	do	3439	do	2 y	17078	Do.
Do	57	04	00	170	24	00	26	S. bk. Sp	45	Sept. 2, 1893	3557	do	3	18354	Do.
Do	57	00	00	169	43	00	35	fne. gy. S. Sh	40. 8	July 31, 1893	3509	do	2	18332	Do.
Do	56	58	00	170	09	00	25	S. dk. Sp. rky	42. 9	Sept. 3, 1893	3558	do	1 ♀	32361	Do.
Do	56	57	30	170	33	00	49	gn. M. fne. S	41	Sept. 2, 1893	3556	do	1	18353	Do.
Do	56	57	00	169	27	00	34	fne.gy.S.bk.Sp.	37. 8	July 28, 1893	3504	do	20	18328	Do.
Do	56	56	00	169	52	00	39	gy. s. brk. Sh	42. 5	Sept. 3, 1893	3559	do	1	18355	Do.
Do	56	50	00	169	59	00	41	fne. gy. S. Sh	41. 1	Aug. 18, 1893	3554	do	1	18350	Do.
Do	56	40	00	169	20	00	43	fne.gy.S.bk.Sp.	40. 7	Sept. 3, 1893	3560	do	13	18356	Do.
Do	56	37	00	170	01	00	56	gn. M. fne. S	38. 5	July 14, 1893	3495	do	1 ♂	18326	Do.
Do	56	34	00	170	19	00	62	gn. M	39. 5	Sept. 2, 1893	3551	do	1	18352	Do.
Do	56	31	00	169	17	00	48	gy. S. bk. Sp	40. 7	Sept. 3, 1893	3561	do	1	18357	Do.
Do	56	28	00	169	28	00	54	bk. S. rky	39. 8	Sept. 2, 1893	3552	do	1 ♂	18351	Do.
Do	56	02	00	169	30	00	121	fne. gy. S. G	38. 6	July 17, 1893	3500	do	1 ♂	18327	Do.
Off Cape Newenham	58	11	30	163	02	45	17. 5	gy. S	46. 2	June 13, 1890	3250	do	2	15872	Do.
Do	58	34	15	162	22	00	21	fne. gy. S. G	43	do	3248	do	1	15871	Do.
Between Pribilof Islands and Bristol Bay.	56	45	00	167	25	00	50	gn. M. S	34. 6	Aug. 22, 1895	3611	do	50	19318	Do.
Do	56	34	00	167	19	00	57	gn. M. S	38. 9	Aug. 9, 1893	3539	do	3	18347	Do.
Do	56	27	00	166	08	00	51	gn. M. fne. S	36	do	3540	do	6	18348	Do.
Do	57	33	00	165	55	00	36	gy. S. M	32	July 29, 1893	3506	do	7	18330	Do.

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[5] For larvae examined, see Rept. Canad. Arc. Exped., 1913–18, vol. 7, part A, 1919, p. 9A.

[6] Beach.

Material examined of Hyas coarctatus—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°*F*						
Bering Sea—Continued.											
Between Pribilof Islands and Bristol Bay.	57 35 50	165 05 00	25.5	fne. gy. S	37.5	June 14, 1890	3251	*Albatross*	86	15873	*alutaceus.*
Do	57 43 00	164 42 00	31	fne. gy. S	37.5	July 29, 1893	3507	do	8 lge	18331	Do.
Do	57 05 50	164 27 15	36	M. S	35	June 14, 1890	3253	do	1 y. ♀	15875	Do.
Do	57 22 20	164 24 40	29.5	bk. M	44.8	do	3252	do	16	15874	Do.
Do	56 14 00	164 08 00	49	bk. M. fne. S.	36.1	Aug. 10, 1893	3541	do	1	19346	Do.
Bristol Bay	57 51 30	164 40 00	23	fne. gy. S	41.8	July 22, 1890	3305	do	5	15892	Do.
Do	58 26 30	161 36 00	17.5	G	38	June 9, 1890	3246	do	2	15870	Do.
Do	57 24 30	161 17 00	33	fne. gy. S	38.9	July 22, 1890	3306	do	19	15894	Do.
Do	58 02 30	161 13 45	28	fne. gy. S		July 21, 1890	3304	do	1 y	15893	Do.
Do	57 27 00	160 23 30	33	bk. S	39.5	do	3303	do	15	15891	Do.
Do	57 45 45	160 12 15	30	fne. gy. S	40.2	do	3302	do	4	15890	Do.
Do	56 26 30	160 00 00	15	bk. G	45.5	July 17, 1890	3288	do	39	15884	Do.
Do	57 14 00	159 35 00	32	bk. S. G		July 18, 1890	3292	do	3	15886	Do.
Do	57 30 00	159 33 00	30	fne. gy. S	40	do	3293	do	5	15887	Do.
Do	56 58 30	159 11 00	26	bk. S. G	41.2	do	3291	do	4	15885	Do.
Do	57 38 00	159 07 30	26	gy. S	41.5	July 19, 1890	3297	do	1	15889	Do.
Do	57 16 45	159 03 30	30	bk. G	41	July 18, 1890	3294	do	12	15888	Do.
Southwest of Bristol Bay.	56 39 30	160 29 00	37	fne. gy. S. Sh. G.	41.5	July 17, 1890	3286	do	36	15883	Do.
Do	56 16 30	160 53 00	25	fne. G	43	June 29, 1890	3284	do	1	15882	Do.
Do	56 28 00	161 16 30	39	fne. gy. S	40.3	do	3283	do	4	15881	Do.
Do	56 14 00	161 41 15	36	gy. S. bk. Sp.		June 28, 1890	3281	do	3	15879	Do.
Do	56 30 45	161 50 15	53	fne. S. gn. M.	38.2	June 29, 1890	3282	do	23	15880	Do.
Do	56 27 00	162 08 00	36	fne. gy. S	41	June 28, 1890	3280	do	2	15878	Do.
Do	56 12 30	162 13 00	47	fne. gy. S	38.8	do	3278	do	68	15876	Do.
Do	56 25 40	162 39 15	41	fne. gy. S	37	do	3279	do	8	15877	Do.
Do	56 10 00	163 26 00	49	dk. M. fne. S.	39.2	Aug. 10, 1893	3542	do	2	18349	Do.
Siberia:											
East Cape						July 15, 1879		Dr. R. White	1♂ 2♀	14744	Do.
Plover Bay			10–25			1880		W. H. Dall	2♂ 1♀ 2 y	14740	Do.
Do			15–20			1880		do	10♂ 9♀	5241	Do.
Do						1905		C. W. Washburne, U. S. Geol. Surv.	1 carapace	32441	Do.
Off Copper [or Miedni] Island.	North point Copper Island, N. 76° E., 8.8 miles. 54 50 24	Long. E. 167 13 00	57–56	gn. S		June 14, 1906	4788	*Albatross*	1 y. ♂	46452	*alutaceus* varying toward *ursinus.*

Do	North point Copper Island, N. 73° E., 9.1 miles. 54 49 45 | 167 12 30	56	gn. S.		do	4789	do	1 y. ♀	46673	*ursinus*?.
Kamchatka	Cape Nalacheff, N. 5° W., 10.5 miles.	42	gy. S. G.		June 23, 1900	3782	do	2 y	46672	*alutaceus*.
Do	S. shore Tareineki, S. 43° W., 0.7 miles.	12	gn. M. S. Sh. G.		June 21, 1900	3780	do	1 ♀	25211	Do.
Do	Staritschkof Island, S. 70° W., 5 miles. 52 47 20 | 158 44 30	58–69	S. P.		June 20, 1906	4791	do	12 ♂ 50 ♀ (21 ovig.).	46448, 46449	Do.
Do	Staritschkof Island, S. 76° W., 4.8 miles. 52 46 50 | 158 44 30	69–48	gn. S. P.		do	4795	do	28 ♂ 42 ♀ (13 ovig.).	46447	Do.
Do	Staritschkof Island, S. 71° W., 4 miles. 52 47 00 | 158 43 00	48	S. P. Sh.		do	4796	do	4 ♂ 3 ♀ 4 y	46450	Do.
Do	Avatcha Bay 52 57 45 | 158 36 30	16	bk. M.		Aug. 19, 1896	3642	do	1 ♂	20154	Do.
Do	51 16 00 | 158 03 00	100	bk. S. P.	31.7	Aug. 20, 1896	3643	do	1 ♀	20155	Do.
Do	51 09 00 | 157 48 00	96	bk. S.	33.1	do	3644	do	1 ♂	20156	Do.
Do	Codfish banks, Okhotsk Sea; mouth of Aangan River, N. 71° E., 8.5 miles. 51 37 00 | 156 21 00	25	gn. S.	36.9	June 21, 1906	4798	do	7 y	46451	Do.
Do	Mouth of Aangan River, N. 75° E., 8 miles. 51 38 00 | 156 21 00	25	gn. S.		do	4799	do	6 y	43797	Do.
Okhotsk Sea							M. Sasaki	2 ♂	54506	Do
Japan:										
Sakhalin Island	Flat Hill, N. 48° W., Cape Patience, S. 74° W. 48 43 10 | 144 59 30	67	S. P.	30.9	Sept. 27, 1906	5024	*Albatross*	1 ♀	46461	Do.
Do	46 44 30 | 143 45 00	64	br. M. fne. bk. S. R. Co.	29.8	Sept. 26, 1906	5016	do	2 ♂	46458	*alutaceus* varying toward *ursinus*.
Do	Cape Tonin, N. 59° W., 12.5 miles. 46 43 30 | 143 45 00	64	br. M. fne. bk. S. R. Co.		do	5017	do	1 y. ♂	46459	Do.
Do	Cape Tonin, N. 66° W., 21.3 miles. 46 41 30 | 143 57 40	192	br. M. bk. S. P.	32.1	do	5018	do	1 ♂ 1 y	46460	Do.
Do	West of Robben Island	18	fne. gy. S.		Aug. 31, 1896	3646	do	10	20157	*alutaceus*.
Do	do	25	fne. dk. S.		do	3649	do	2 ♂ 2 ♀	20158	Do.
Do	do	20	fne. gy. S.		do	3651	do	9	20159	Do.
Do	Aniwa Bay 46 04 40 | 142 27 30	42–43	gn. M. fne. gy. S.		Sept. 24, 1906	5005	do	1 ♂ 1 y. ♀	46456, 43796	Do.
Do	Aniwa Bay 46 04 00 | 142 29 00	43–42	gn. M. fne. gy. S.	36.1	do	5006	do	4 ♂ 2 ♀	43794	*alutaceus* varying toward *ursinus*.
Do	Aniwa Bay 46 07 50 | 142 37 20	40	gn. M. fne. gy. S.	33.9	do	5008	do	1 ♂	43798	*alutaceus*.

Material examined of Hyas coarctatus—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude E.									
	° ′ ″	° ′ ″			°F						
Japan—Continued.											
Sakhalin Island	Korsokov Light, N. 5° E., 9.5 miles. 46 30 30	142 43 30	21–32	gn. M. S		Sept. 24, 1906	5010	*Albatross*	3♂ 8♀ 18 y	43793, 46674	*alutaceus* varying toward *ursinus*.
Do	Aniwa Bay 46 18 30	143 05 40	42	gn. M	33.9	Sept. 25, 1906	5011	do	1♀	46457	*alutaceus*.
Do	Aniwa Bay 46 17 50	143 08 30	42–43	gn. M		do	5012	do	1♂ 2 ovig. ♀	43792	*alutaceus* varying toward *ursinus*.
Do	Aniwa Bay 46 17 00	143 09 00	43		36.7	do	5013	do	1♀	43795	Do.
Do	Gulf of Tartary 47 37 30	141 42 30	31	gy. M. gn. S		Sept. 23, 1906	5000	do	2♂ 1♀ 2 y	46453	Do.
Do	Gulf of Tartary 47 32 30	141 45 00	35–38	fne. gy. S. gn. M.	42.4	do	5003	do	1 y. ♀	46454	Do.
Do	Gulf of Tartary 47 31 00	141 44 30	38	gn. M	41.2	do	5004	do	2 imm. ♀	46455	Do.
Yezo Strait	44 04 00	145 32 00	86	dk. S. G	43.7	Sept. 30, 1906	5031	do	2 y	46675	*ursinus*, probably.
Sea of Japan	Bomasiri Shima (off north end of Rebun To), N. 47° E., 5 miles. 45 25 30	140 53 00	142	gy. M. S. G	35.1	Sept. 22, 1906	4993	do	1 y. ♂ 1 y. ♀	46496	*ursinus*.
Do	Bomasiri Shima, N. 52° E., 8 miles. 45 24 00	140 49 10	[7] 325	gn. M		do	4992	do	1 ovig. ♀	46493	*ursinus*. Type.
Do	North point Sado Island, S. 31° W., 15 miles. 38 33 00	138 40 00	176–200		34.9	July 18, 1906	4812	do	1 y. ♀	46494	*ursinus*
Do	No Saki, S. 80° W., 4.5 miles. 37 08 10	137 08 00	130	gn. M	39.4	July 21, 1906	4822	do	1 y. ♀	46495	Do.
China: Shanghai [8]								E. Deschamps	1♂ 2♀	47109	Do.
Europe:											
Shetland Islands								A. M. Norman	7	6319, 9060	Typical.
Kiel Harbor, Germany								K. Möbius	1 ovig. ♀	16286	Do.

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[7] Approximate.

[8] The author ventures to include this record in the list, as Hansen has found a specimen in the Copenhagen Museum labeled "Amoy."

H. coarctatus alutaceus has an extensive range. According to Birula (1910) it reaches as far north and west as Bennett Island on the Siberian coast, thence eastward to Bering Strait and southward through the width of Bering Sea to Okhotsk Sea and the southern shore of Sakhalin Island. Further south, Sea of Japan to Shanghai, there is another well marked subspecies, *Hyas coarctatus ursinus*, to be dealt with elsewhere.

In the Arctic, *alutaceus* occurs also east of Bering Strait as far as Point Barrow, Alaska, and again in Beaufort Sea, Northwest Territories. Although from this point to the Greenland coast the species is absent, it is the same form, *alutaceus*, which appears in lat. 70° 25′ N., West Greenland, and is continued thence southward, by way of Hudson Strait and Bay to Labrador, Newfoundland, and Cape Breton.

At Newfoundland and farther west and south, that is, from Nova Scotia, by way of Gulf of Maine, to North Carolina, the form changes, but not abruptly, into the typical *coarctatus* of the British Isles. This form, following the general direction of the Gulf Stream, is continued northeasterly from the Carolina coast to northwestern Europe; thence it extends eastward in the Arctic only to the Murman Sea and therefore fails to connect with the Siberian range of *alutaceus* by nearly 100° of longitude.

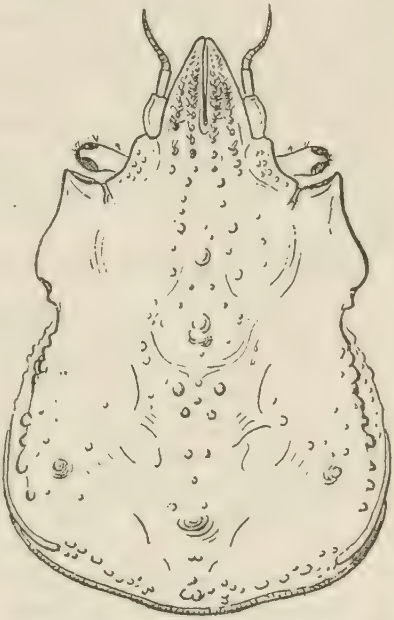
FIG. 93.—HYAS COARCTATUS, MALE, CARAPACE. (AFTER SMITH, MS.)

Besides the geographical variation there is much individual variation even in specimens from the same gathering, regardless of age or sex. This makes the definite division into separate forms very difficult and unsatisfactory. Some of the variations are noted in the last column of the distribution table.

Measurements.—Largest specimen, male, examined (Grand Banks, *alutaceus*, 40182), length of carapace 80, greatest width 64.5 mm. Male (west Greenland), length 99, width 74 mm. (Hansen). Largest American specimen, male, of typical form examined (off Cape Cod, 4555), length 30.2, width 19.7 mm. Largest specimen known of typical form, male, Murman Sea, length 51.5, width 35 mm. (Birula, 1910).

Range.—From west Greenland (lat. 70° 25′ N., Hansen) and east Greenland (lat. 66° N., Dons) to Hudson Strait and Bay, thence south to Cape Hatteras, North Carolina (lat. 35° 43′ N.).

Langton Bay, Northwest territories, Canada; from Point Barrow, Alaska, to Bering Strait and southward in American waters of Bering Sea to lat. 56° 10′ N.; thence southward via Kamtchatka and Sakhalin Island (Japan) to Yezo Strait and through the Sea of Japan to Korea (lat. 37° 02′ N., Hansen), *ursinus* form. Shanghai (see table); Amoy (lat. 24° 30′ N., Hansen).

Iceland; Arctic coast of Europe to long. 49° E. (Birula) and lat. 79° 30′ N. at Spitzbergen (Dons); northern Europe southward to about latitude 49.5° N. (Dons).

Coast of Siberia and northward, as far west as Bennett Island (about 147° E.) and north as 76° 50′ N. (Birula) to East Cape.

Depth, low-water mark to 373 fathoms, exceptionally 906 fathoms (W. Atlantic).

Material examined.—See table, pages 260–268.

HYAS LYRATUS Dana

BLUNT-NOSED CRAB

Plate 235

Hyas lyratus DANA, Amer. Journ. Sci., ser. 2, vol. 11, 1851, p. 268 (type-locality, *ad oras Oregonenses;* type not extant); U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 86; atlas, 1855, pl. 1, fig. 1*a-d*.—RATHBUN, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 72, pl. 3, and synonymy.—HOLMES, Occas. Papers Calif. Acad. Sci., vol. 7, 1900, p. 32, and synonymy.

Hyas coarctatus DONS, Tromsø Mus. Aarshefter 34, 1912–13, p. 158 (part: *lyratus* form).

Diagnosis.—Carapace lyrate; angle of hepatic margin acute or subacute. Basal antennal article with a large, smooth, round tubercle at antero-external angle (fig. 90, *c*).

Description.—Carapace more lyrate than in *H. coarctatus;* the lateral expansion of the hepatic region is more pronounced and is produced to a subacute angle. Surface less convex antero-posteriorly. The lines of tubercles, median, marginal and branchial, are stronger; two large median gastric tubercles, and on either side and a little in advance of the anterior of these, another large tubercle; cardiac region surmounted by a tubercle, a larger one on the intestinal region; a pointed tubercle on the posterior margin of the hepatic expansion. A narrow cleft between the rostral horns, tips more widely separated. Margins of basal article of antenna armed with a few small conical tubercles including one at the extremity of the inner margin; at the extremity of the outer margin a very large, smooth, spherical tubercle, which is partly visible from above and alone serves to distinguish the species not only from others of this

Material examined of Hyas lyratus

Locality	Bearings						Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.
	Latitude N.			Longitude E.										
Bering Sea:	°	′	″	°	′	″			°F					
Off Bering Island, Siberia	54	36	15	166	57	15	72	P		June 14, 1906	4792	*Albatross*	1 y. ♂	46679.
				Long. W.										
Off Pribilof Islands, Alaska	56	34	00	170	19	00	62	gn. M	39.5	Sept. 2, 1893	3554	do	2	18320.
Do	56	58	00	170	09	09	25	S. dk. Sp. rky	42.9	Sept. 3, 1893	3558	do	1 ♂	18321.
Do	56	02	00	169	30	00	121	fne. gy. S. G	38.6	July 17, 1893	3500	do	25	18317.
Do	56	40	00	169	20	00	43	fne. gy. S. bk. Sp.	40.7	Sept. 3, 1893	3560	do	1♂ 1♀	18322.
Southeast of Pribilof Islands	55	17	00	167	34	00	91	gn. M. S	37.1	Aug. 13, 1895	3605	do	2♀	55746.
				Long. E.										
Off Kyska Island, Rat Islands.	52	01	00	177	34	00	31	bk. G		June 8, 1894	3598	do	1	18978.
Do	52	05	00	177	40	00	55	rky. fne. S. Sh		June 9, 1894	3599	do	1	18979.
Petrel Bank, off Semisopochnoi Island.	52	11	00	179	49	00	52-43	fne. G		June 5, 1906	4777	do	1 y. ♂	46677.
				Long. W.										
Do.	52	11	00	179	57	00	51-56	brk. Sh. P. S		do	4779	do	1 y. ♀	46678.
Off Unalaska	53	40	30	167	30	00	59	bk. S	40.8	Aug. 18, 1890	3319	do	1	15935.
Do	53	40	00	167	29	45	59	bk. S. Co	40.8	do	3320	do	1	15936.
Do	53	58	05	166	33	25	93	M	40.8	Aug. 22, 1890	3335	do	1	15937.
Do	53	59	36	166	29	43	85	gn. M	41	Aug. 15, 1890	3311	do	5	15933.
Do	54	01	51	166	27	38	68	fne. bk. S	42.7	do	3313	do	1	15934.
North of Akutan Island	55	00	00	166	10	00	78	fne. bk. S	40.1	Sept. 1, 1893	3549	do	2	18319.
Do	54	15	00	166	03	00	72	P	41	July 23, 1888	2842	do	11	15533.
Do	54	18	00	165	55	00	56	P	41	do	2841	do	1 ♀	15531.
Off Unimak Pass	54	44	00	165	42	00	91	bk. S	39.5	Sept. 1, 1893	3548	do	9	18318.
Do	54	49	00	165	32	00	81	gy. S. G	39	June 24, 1890	3257	do	5	15910.
Do	54	26	15	165	32	00	56	bk. P	39	May 22, 1890	3223	do	2	15903.
Unimak Pass	54	20	00	165	30	00	50	bk. S. P. Sh	39.7	do	3222	do	12	15902.
Do	54	15	00	165	06	00	34	G. brk. Sh		do	3220	do	1 y.	15901.
Off Unimak Island	54	48	00	165	13	30	70	bk. S. G	39	June 24, 1890	3258	do	2	15911.
Do	54	40	50	165	05	30	41	bk. S. G	40.6	do	3259	do	1	15912.
North of Alaska Peninsula	55	23	30	163	29	00	32	bk. S	41	June 25, 1890	3267	do	3	15913.
Do	55	31	40	163	07	00	31	bk. & rd. S	42	June 27, 1890	3272	do	1	15914.
Do	56	25	40	162	39	15	41	fne. gy. S	37	June 28, 1890	3279	do	1	15917.
Do	56	12	30	162	13	00	47	fne. gy. S	38.8	do	3278	do	9	15916.
Do	56	27	00	162	08	00	36	fne. gy. S	41	do	3280	do	1	15918.
Do	56	30	45	161	50	15	53	fne. S. gn. M	38.2	June 29, 1890	3282	do	2	15920

Material examined of Hyas lyratus—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.
	Latitude N.	Longitude W.								
N. of Alaska Peninsula—Con.	° ′ ″	° ′ ″			° F					
Do	55 58 45	161 46 30	18	G. S. R	43. 2	June 28, 1890	3277	*Albatross*	3	15915.
Do	56 14 00	161 41 15	36	gy. S. bk. Sp		do	3281	do	2	15919.
Do	56 28 00	161 16 30	39	fne. gy. S	40. 3	June 29, 1890	3283	do	1	15921.
Do	56 16 30	160 53 00	25	fne. G	42	do	3284	do	14	15922.
Do	56 39 30	160 29 00	37	fne. gy. S. Sh. G	41. 5	July 17, 1890	3286	do	4	15923.
Do	56 26 30	160 00 00	15	bk. G	45. 5	do	3288	do	1	15924.
Off Bristol Bay	57 24 30	161 17 00	33	fne. gy. S	38. 9	July 22, 1890	3306	do	10	15932.
Bristol Bay	58 12 45	160 37 30	17	fne. gy. S		July 20, 1890	3301	do	1	15931.
Do	57 45 45	160 12 15	30	fne. gy. S	40. 2	July 21, 1890	3302	do	6	15938.
Do	58 12 30	159 55 00	15	P	42. 2	July 20, 1890	3300	do	6	15930.
Do	57 14 00	159 35 00	32	bk. S. G		July 18, 1890	3292	do	4	15926.
Do	58 38 30	159 33 30	14	bk. M	38	June 8, 1890	3241	do	1	15909.
Do	57 30 00	159 33 00	30	fne. gy. S	40	July 18, 1890	3293	do	11	15927.
Do	56 58 30	159 11 00	26	bk. S. G	41. 2	do	3291	do	3	15925.
Do	57 16 45	159 03 30	30	bk. G	41	do	3294	do	8	15928.
Do	57 26 30	158 46 00	24	gy. S. bk. Sp	43	July 19, 1890	3296	do	2	15929.
Do	58 16 30	158 13 00	11	bk. S		June 7, 1890	3235	do	2	15907.
Do	58 11 00	158 05 30	14. 75	G. S. Sh	39	do	3236	do	2	15908.
Do	58 23 45	157 42 45	7. 25	S. P	44. 5	June 2, 1890	3233	do	6	15906.
Head of Bristol Bay	58 31 30	157 34 15	10. 5	P. St		do	3232	do	3	15905.
Do	58 35 00	157 28 50	12	S		do	3231	do	5	15904.
Aleutian Islands and south of Aleutian Islands:										
Chichagof Harbor, Attu Island.			5–7	G. S		1873		W. H. Dall	1♂	14720.
Kyska Harbor, Kyska Island.			7–14	S		1873		do	1♂ 1♀ 1 y	14721.
Constantine Harbor, Amchitka Island.			6–10	S. St		1873		do	1♂	14726.
Bay of Islands, Adakh Island.			9–16	M. S		1873		do	2 y	14767.
West of Amaknak Island, Captains Bay, Unalaska.			60	R. St. M		1874		do	1♂	14723.
Port Levashef, Unalaska						1880		do	1♂ 1♀	12504.
Do			25–75	crs. S		1874		do	3♂ 1♀ 1 y	14722.
South of Akutan Island	53 56 00	165 56 00	45	brk. Sh. P	43. 5	July 28, 1888	2843	*Albatross*	5♂ 2♀	15532.
Southeast of Akutan Island	53 56 00	165 40 00	54	gy. S	42	do	2844	do	1♀	15537.
South of Unimak Island	54 14 00	164 35 00	59	bk. S. G	38	May 22, 1890	3219	do	2	15900.
Do	54 20 30	163 37 00	61	bk. S. M		May 21, 1890	3216	do	3	15899.
Do	54 10 00	162 57 30	41	bk. S		do	3213	do	13	15898.

South of Alaska Peninsula:										
Belkofski Bay			15–25	S. G		1880		W. H. Dall	2♂ 3♀	14724.
Coal Harbor, Unga Island			6–9	S. St. M		1872		do	10♂ 7♀	14718.
Shumagin Islands	55 16 00	160 28 00	69	gn. M	43	Aug. 2, 1888	2849	*Albatross*	2♀	15535.
Do	55 10 00	160 18 00	110	gn. M	41	July 31, 1888	2848	do	1♂	15534.
Do	55 01 00	160 12 00	48	fne. gy. S	42	do	2847	do	2 y	15542.
Do	54 55 00	159 52 00	35	gy. S. brk. Sh	44.8	Aug. 4, 1888	2851	do	1♀	15543.
Do	55 15 00	159 37 00	58	bk. S	41.8	do	2852	do	2♂ 1♀ 3 y	15538.
South of Kodiak Island	57 00 00	153 18 00	69	gn. M	44	Aug. 10, 1888	2855	do	2	15896.
Do	56 55 00	153 04 00	60	bk. S	42.8	do	2854	do	1♀	15540.
East of Afognak Island	58 07 00	151 36 00	68	gy. Sh. bk. Sp	44	Aug. 22, 1888	2856	do	3♂ 8♀	15536.
Do	58 05 00	150 46 00	51	brk. Sh. gy. S	44.6	do	2857	do	1	15897.
Shelikof Strait, Kodiak	Cape Uyak, S. 51° W., 8.5 miles.		65–48	bu. M. S. G		Aug. 15, 1903	4291	do	5♂ 2 y	31584.
Kodiak								W. J. Fisher	1	12318.
Do						Aug. 14, 1888		*Albatross*	1♂ 1♀	15539.
Alitak Bay, Kodiak	Cape Alitak, S. 71° W., 5.5 miles.		29	dk. gy. M. R		Aug. 6, 1903	4279	do	1 y	31657.
Off Karluk, Kodiak	Cape Ugat, NE. by N.; Cape Karluk, S. SW. ¼ W.; Church, S. SE. ½ E.		31	gy. S. Sh	46.4	July 19, 1897	3674	do	3 y	21768.
Do	Cape Ugat, NE. by E., Church, SE. ¼ S.		110	gn. M	39	do	3675	do	1♂ 1♀	21769.
Uyak Bay, Kodiak	South end Harvester Island, N. 80° W., 2.6 miles.		80–74	gy. M	42.2	Aug. 14, 1903	4289	do	1♂ 1♀	31582.
Do	South end Harvester Island, S. 38° W., 1.5 miles.		99	sft. gy. M. fne. bk. S.		do	4290	do	2 y	31583.
Shahafka Cove, St. Paul Harbor, Kodiak.			12–14	M. S		1874		W. H. Dall	28 y	14727.
Afognak Bay, Afognak Island, Kodiak Group.	Point Lipsett, N. 83° W., 1.9 miles.		16–17.5	gy. S. brk. Sh	50.9	Aug. 3, 1903	4268	*Albatross*	1 y	31656.
Do	Point Lipsett, SW., 1 mile.		14–19	hrd. gy. S. R		do	4270	do	3♂	31581.
Off Marmot Island, east of Afognak Island.						July 8, 1880		T. H. Bean	1♂	14719.
Southeastern Alaska:										
Chugachik Bay, Cooks Inlet			20–60	sdy. M		June 30, 1880		W. H. Dall	3♂	12510.
Cordova, Prince William Sound.						June 29, 1914		Bureau of Fisheries.	5♂ 1♀	48836.
Port Etches, Prince William Sound.			5–18	G. St		1874		W. H. Dall	19 y	14725.
Berg Bay, Glacier Bay						1899		Harriman Alaska Exped.		
Vicinity of Funter Bay, Lynn Canal.	Clear Point, N. 63° E., 1.7 miles.		350	rky		July 23, 1903	4257	*Albatross*	1♂	31577.
Chilkoot Inlet	Indian Rock, N. 3° W., 2 miles.		73–72	gy. M	38.5	July 16, 1903	4256	do	1♂ 1♀	31576.
Dundas Bay, Icy Strait	Point Wimbleton, S. 46° W., 0.1 mile.		78–21	gy. S. brk. Sh. R	44.7	July 24, 1903	4259	do	1♀	31578.

Material examined of *Hyas lyratus*—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.
	Latitude N.	Longitude W.								
Southeastern Alaska—Con.	° ′ ″	° ′ ″			° *F*					
Dundas Bay, Icy Strait	Point Wimbleton, S. 24° W., 0.3 mile.		10–8.5	gn. M. rky		July 24, 1903	4261	*Albatross*	1♂	31579.
Do	Point Wimbleton, S. 20° W., 0.4 mile.		9–6.5	crs. S. rky		do	4263	do	1♂	31580.
Juneau			50			1899		Harriman Alaska Exped.		
Stephens Passage	Hugh Point, S. 71° W., 3.4 miles.		198	rky	40.9	July 14, 1903	4251	*Albatross*	1 y	31574.
Do	Thistle Ledge, N. 53° E., 1.7 miles.		188–131	R. brk. Sh	40.9	do	4253	do	1♂ 3♀	31575.
Bay of Pillars, Kuiu Island. In stomach of halibut.			8			Aug. 29, 1900		do	1♂ 5♀	25210.
Sitka Harbor			15	G. M		1874		W. H. Dall	2 y	14766.
Off Shakan, Sumner Strait	Point Amelius, S. 80° W., 5.8 miles.		212–169	bu. M	44.2	Aug. 24, 1903	4302	*Albatross*	1♂	31586.
Do	Point Amelius, N. 75° W., 5 miles.		153–218	S. R		do	4299	do	1♀	31585.
Wrangell						July —, 1882		Dr. W. H. Jones, U. S. N., U. S. S. *Wachusett.*	3♂ 3♀	5243.
Port Wrangell (probably)								Lieut. Commander H. E. Nichols, U. S. N.	1♂	5872.
Steamer Bay, Etolin Island						1883		do	1♂	16279.
Kasaan Bay, Prince of Wales Island.	East end Long Island, N. 55° W., 3 miles.		123–101	gy. gn. M. crs. S. Sh.	44.1	July 11, 1903	4246	*Albatross*	1♂	31573.
Do	Sandy Point, N. 62° W., 1.2 miles.		42–47	gn. M	49.1	do	4243	do	1♂ 4♀	31572.
Do	East end Long Island, N. 78° W., 1.1 miles.		95–114	gn. M. fne. S. brk. Sh.	44.3	do	4247	do	2 y	31655.
Vicinity of Yes Bay, Behm Canal.	East end Square Island, Spacious Bay, S. 34° W., 1.2 miles.		147–205	R. crs. S	42.8	July 8, 1903	4236	do	1♀	31571.
Yes Bay						Aug. 25, 1905		do	1♂ 1 ovig. ♀	46497.
Nakat Harbor, about 3 miles northeast of Port Tongass, Dixon entrance.						June 10, 1883		Lieut. Commander H. E. Nichols, U. S. N.	1	14841.
British Columbia:										
Otter Bay, Pender Island, Seymour Narrows.								*Albatross*	2	19317.

Menzies Bay, Discovery Passage.			6	sft		July 31, 1881		Lieut. Commander H. E. Nichols, U. S. N., U. S. C. S. S. *Hassler*.	1 y	5777.
Comox			(1)			July 6, 1915		W. Spreadborough	1♂	Victoria Memor. Mus.
Victoria								C. F. Newcombe	1	15798.
Washington:										
Off Squin Bay	48 14 30	122 58 00	81	bu. M	44	Apr. 30, 1894	3596	*Albatross*	1 y	18977.
Port Townsend								do	5♂ 2♀	15541.
Port Townsend (Bay)	Kala Point, N. 41° W., 1.1 miles.		14–17	sft. gn. M. br. Co.	50.8	July 1, 1903	4214	do	1♂ 2♀	31569.
Do	Kala Point, N. 83° W., 0.5 mile.		17	gn. M. fne. S. stky.	50.1	do	4215	do	3♂ 6♀	31570.
Admiralty Inlet	Olele Point, Oak Bay, S. 27° E., 1.5 miles.		16–26	gn. M. S. brk. Sh.	51.8	do	4219	do	1 y	31653.
Do	Olele Point, Oak Bay, S. 20° E., 0.8 mile.		16–31	gn. M. S. brk. Sh.	50.8	do	4220	do	1 y	31654.
Puget Sound at Simeahmoo								Dr. C. B. R. Kennerly, NW. Boundary Survey.	1 y. ♂	1230, M. C. Z.

genus but from all other spider crabs. The outer angle of the merus of the third maxilliped is more arcuate than in *coarctatus*. The tubercles of the chelipeds are stronger than in *coarctatus* and the manus has the upper margin tuberculate for two-thirds of its length. The manus of well developed males is longer in proportion to its width than in the preceding species.

Color.—Dull pinkish red.

Measurements.—Male (5872), length of carapace 105, width 80 mm.

Range.—Bering Sea, from a line connecting Bering Island, Commander Islands, Siberia, with Pribilof Islands and Bristol Bay, Alaska (greatest lat. 58° 38′ 30″ N.), southward along the shores of the Aleutian Islands, thence eastward and southward to Admiralty Inlet, Washington (about lat. 48° N.). Depth, 5 to 350 fathoms.

Material examined.—See table, pages 271–275.

Genus PELIA Bell

Pelia Bell, Proc. Zool. Soc. London, vol. 3, 1835 (1836), p. 170; type, *P. pulchella* Bell; Trans. Zool. Soc. London, vol. 2, 1836, p. 44.

Carapace pyriform, swollen, especially the gastric and cardiac regions, smooth or nearly so, and covered with a thin coating of short, soft hair; lateral margins entire. Rostrum well developed, divided for half or more of its length into two acute divergent horns. The outer margins of the supraocular eaves converge anteriorly and

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[1] Dredged

Material examined of Pelia mutica

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
Massachusetts:					°F						
Buzzards Bay	Cataumet Harbor		3–4	S. G		Aug. 7, 1905	141	*Phalarope*	2♂	32473	
Do	Nyes Neck, S. SE. ¾ E., ⅛ mile.		5. 25	S	68	Aug. 26, 1881	956	*Fish Hawk*	1♂1♀	34069	
Do	Near entrance of Hog Island Harbor.		3. 25–4. 75	St. many algae		Aug. 5, 1905	134	*Phalarope*	1♀	32488	
Do	Northern shore of Uncatena Island.		3–4. 5	P. St		July 27, 1905	117	do	1♂	32489	
Woods Hole	Nobska Beach					1882		U.S.Fish Comm.	1♂	34170	
Do	U. S. Fisheries pier					Aug. 5, 1905		J. A. Cushman	1♀	32475	
Do	Vicinity of Woods Hole.					1905		M. J. Rathbun	3	32474	
Do	Ram Island			S		Aug. 6, 1893		S. D. Judd	1♀	22169	
Off Marthas Vineyard	Off East Chop		10–11. 5	S.Sh.G.R.M	72	Aug. 11, 1887	1205–1208	*Fish Hawk*	4♂7♀	12784	
Do	West Chop Light, E. ½ N., 1¾ miles.		9	S. G	65	Sept. 22, 1881	1041	do	2♂	14458	
Do	West Chop Light, E. ½ N., 1½ miles.		6	S. G	65	do	1042	do	7♂5♀	40748	
Do	West Chop Light, S. ¾ E., ¾ mile.		14	St	67	July 20, 1881	933	do	2 ovig. ♀	38139	
Vineyard Sound								U.S.Fish Comm.	11	16209	
Do						1871		do	10	19026	
Do						1875		do	1♂1♀	40128	
Do			6–13	hrd. Sh. G	69–70	Aug. 31, 1875	710–715	*Bluelight*	1♂5♀	40749	
Do						Aug. 10, 1881		U.S.Fish Comm.	1♂	40758	
Do			(1)			1883		do	1	6397	
Do			3–5			1883		do	2♂2♀	8486	
Do			(2)			1911		do	2	43153	
Connecticut:											
Noank						1874		do	1♂	40750	
Exact locality not given						1874		do	1 y	36265	
Maryland: Tangier Sound	Fox Poplar to Jones Lighthouse, 51° 03′.		2⅓	sticky	70	June 4, 1891	1651	*Fish Hawk*	12	16773, 31468	
Virginia:											
Eastern shore								J. S. Kingsley collection.	2♀	53067	From Boston Soc. Nat. Hist.
Exact locality not given									Specimens	Union College.	

North Carolina:	° ′ ″	° ′ ″								
Off Cape Hatteras	35 21 00	75 21 30	16	gy. S. brk. Sh.		Oct. 19, 1884		*Albatross*	4 y	41028
Beaufort									Specimens	Union College.
South Carolina:										
Jericho Creek						Jan. 23, 1891		*Fish Hawk*	1	17172
Calibogue Sound						1891		do	1♂	17173
Merrits Creek				Among oysters		Mar. 21, 1891		do	2♂	26179
Florida:										
Barnes Lake and Lignum Vitae Lake.				Débris		Feb. 4, 1903		do	1♂ 1 ovig. ♀	47080
Big Spanish Key Channel.	Between Little Pine Key and No Name Key.		2⅙	rky		Jan. 5, 1903	7397	do	1♀	47082
Off Northwest Channel	24 38 40	81 56 28	5.25	Co	°C 19.5	Feb. 24, 1902	7295	do	1♀	47083
Off Key West	About 1 mile from light.		5.25			June 26, 1893	44	State Univ. Iowa Exped.	2 y	Mus.S.U.I.
Florida Bay			7-11.5			Jan. 29, 1903	([3])	*Fish Hawk*	1♂	47081
Do									Specimens	Union College.
Marco						1885		H. Hemphill	11	16999
Off Sanibel Islands	Sanibel Islands Light, NE., 1¼ miles.		2			Dec. 31, 1912	9	*Fish Hawk*	1♀	50983
Do	Bell Buoy off Sanibel Islands Light, NE., 10-2½ miles.		4.75	Sh. wh. M		Jan. 1, 1913	[4] 9	do	4♂ 2♀	50985
Punta Rassa			1			Feb., 1884		H. Hemphill	1♂	23284
Off Charlotte Harbor	26 35 00	83 11 00	27.5	sdy	{20° C 66° F}	Apr. 2, 1901	7122	*Fish Hawk*	1♂	25598
Charlotte Harbor								W. H. Dall	1♂	17002
Sarasota Bay								H. Hemphill	1	16208
Goodland Point						1885		do	3	17000
Cedar Keys						1887		Lieut. J. F. Moser, U.S.N.	1	16207
Do						Dec. 1883		H. Hemphill	5	6419
Do			1	Co		do		do	9	17001
West Florida								Henderson and Simpson.	1	17800
Cuba: Off Havana						1893		State Univ. Iowa Exped.	1♂ 1♀	Mus.S.U.I.
Porto Rico:										
Mayaguez						Jan. 20, 1899		*Fish Hawk*	2♂	24166
Boqueron Bay						Jan. 25, 1899		do	1♀	24165
Off Boca Prieta	Fanduco Cay, E., 1¾ miles.		8.5	Co. S	°C 25	do	6075	do	1♀	21164
St. Thomas	Sail Rock, W. by N. ½ N., 6 miles.		20-23	Co	25.8	Feb. 6, 1899	6079	do	1♀	21167

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[1] Low water.

[2] Dredged.

[3] Between stations 7432 and 7442.

[4] Haul 1.

are unarmed; a narrow slit separates the eaves from the postocular teeth which are small, subtriangular, and hollowed within for the reception of the eyes. Basal article of antennae long and narrow, furnished usually with a tooth or spine at the antero-external angle; and more or less exposed in dorsal view beside the rostrum. Merus of outer maxilliped notched at inner angle; inner angle of ischium strongly advanced.

Chelipeds stout in old males, slender in females and undeveloped males; merus three-sided; fingers sharp-pointed, finely denticulate or crenulate and in contact in their terminal half. First pair of ambulatory legs much longer than the others; second, third, and fourth pairs diminishing successively in length, the last pair very short. Legs margined with rows of stiff setae; merus much compressed and having an acute upper edge; dactyli strongly curved, corneous tips long and sharp.

Not found outside of America, where it is distributed from southern Massachusetts to St. Thomas, West Indies, from Cape St. Roque, Brazil, to northern Patagonia, from Venice, California, to Panama, and at the Galapagos Islands.

KEY TO THE SPECIES OF THE GENUS PELIA

A^1. Rostrum not long, from one-fourth to two-fifths as long as remainder of carapace. Basal article of antenna not more than half exposed in dorsal view.
  B^1. Carapace elongate, its greatest width about two-thirds its greatest length. Outer margins of rostral horns divergent or parallel.
    C^1. Basal article of antenna half or nearly half exposed in dorsal view.
      D^1. Carapace moderately high on the median line________**mutica**, p. 278.
      D^2. Carapace very high on the median line. Rostrum more deflexed, carapace wider at hepatic regions than in *mutica*__**rotunda**. p. 279.
    C^2. Only the extremity bearing the spine or tooth of the basal article of antenna exposed in dorsal view____________________**tumida**, p. 281.
  B^2. Carapace broad, its greatest width about three-fourths its greatest length. **pacifica**, p. 283.
A^2. Rostrum long, nearly half as long as remainder of carapace. Basal article of antenna almost wholly exposed in dorsal view. (Bell.) **pulchella**, p. 284.

Analogous species on opposite sides of the continent: *mutica* (Atlantic); *tumida* (Pacific).

PELIA MUTICA (Gibbes)

Plate 98, figs. 2 and 3

Pisa mutica GIBBES, Proc. Amer. Assoc. Adv. Sci., vol. 3, 1850, p. 171 [7] (type-locality, Charleston Harbor, off White Point Battery, S. C.; type not extant).

Pelia mutica STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 177.—SMITH, Rept. U. S. Commr. of Fisheries for 1871 and 1872 (1873), p. 548 [254].—A. MILNE EDWARDS, Crust. Rég. Mex., 1875, p. 73, pl. 16, figs. 2–2*b*.—KINGSLEY, Proc. Acad. Nat. Sci. Philadelphia, vol. 31, 1879, p. 385.—SUMNER, Bull. Bur. Fisheries, vol. 31 for 1911 (1913), pt. 1, p. 331 (chart 113); pt. 2, p. 670.

Diagnosis.—Greatest width of carapace about two-thirds its greatest length. Outer margins of rostral horns either diverging anteriorly or parallel.

Description.—Gastric and cardiac regions elevated, the latter smoothly rounded. Rostrum nearly two-fifths as long as remainder of carapace, a furrow on its basal portion; horns more or less divergent, their outer margins often parallel. Basal antennal article half visible in dorsal view, and usually furnished with a small tooth or spine at antero-external angle.

Chelipeds of well-developed male as long as first ambulatory leg but stouter and almost bare. Upper and inner margins of merus dentate; a longitudinal denticulate ridge on the carpus; upper and lower margins of manus slightly arcuate; basal half of fingers widely gaping, the sinus of the dactylus being longer than that of the fixed finger; the occludent margins, as well as the broad basal tooth of the dactylus, are denticulate.

Color.—Bright red in patches on carapace, and in bands on legs, spots of lighter red on chelipeds.

Measurements.—Male (40750), length of carapace on median line 11.2, to end of horns 13.4, width of carapace 8.8 mm.

Habitat.—On gravelly and shelly bottoms of bays and sounds.

Range.—Buzzards Bay and Vineyard Sound, Massachusetts, to west coast of Florida; Cuba, Porto Rico, and St. Thomas, West Indies. Low water to 27½ fathoms.

Material examined.—See table, pages 276–277.

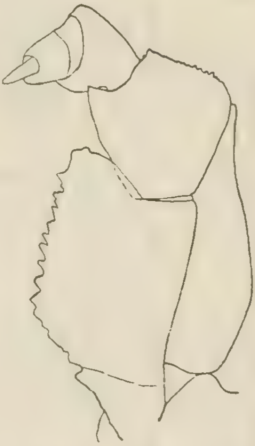

FIG. 94.—PELIA MUTICA (40750), MAXILLIPED, × 17

PELIA ROTUNDA A. Milne Edwards

Plate 100

Pelia rotunda A. MILNE EDWARDS, Crust. Rég. Mex., 1875, p. 74 (type-localities, Desterro, Brazil, figured type in Paris Mus., and northern Patagonia, cotypes, Cat. No. 1899, M. C. Z.).—RATHBUN, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 89.

Pelia rotundata A. MILNE EDWARDS, Crust. Rég. Mex., 1875, pl. 16, figs. 4–4*g*.

Diagnosis.—Differs little from the preceding. Gastric and cardiac regions more swollen, rostrum more deflexed, width of carapace at hepatic regions relatively greater; spine at external angle of basal antennal article a little longer. Perhaps not specifically distinct from *P. mutica*.

Material examined of Pelia rotunda

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude S.	Longitude W.									
	° ′ ″	° ′ ″			°F						
Brazil:											
Off Cape St. Roque	6 59 30	34 47 00	20	brk. Sh	79	Dec. 16, 1887	2758	*Albatross*	1 ♀	21911	
Ilha do Santa Anna								Hartt and Copeland, Thayer Exped.	1 ♂	1901, M. C. Z.	
Rio de Janeiro									1 ♂ 2 ♀	Copenhagen Mus.	
Rat Island, Rio de Janeiro.								*Hassler*	1 ♂ 1 ♀	2047, M. C. Z.	
Uruguay: Rio de la Plata, below Montevideo.			7					do	1 sm. ♂	1900, M. C. Z.	
Argentina:											
Off Rio de la Plata	36 42 00	56 23 00	11.5	S. brk. Sh		Jan. 12, 1888	2764	*Albatross*	2 ♂	16347	
Do	36 43 00	56 23 00	10.5	S. brk. Sh		do	2765	do	2 ♂ 2 ♀	21912	
Do	36 47 00	56 23 00	10.5	S. brk. Sh		do	2766	do	16 ♂ 17 ♀	17321	
Patagonia:											
Off Vermeja Head	41 17 00	63 00 00						*Hassler*	7 ♂ 2 ovig. ♀	1898, M. C. Z.	Identified by A. Milne Edwards. Cotypes.
East of Gulf of San Matias.	41 40 00	45 13 00	30					do	7 ♂ 5 ♀ (2 ovig.)	1899, M. C. Z.	

Measurements.—Male (17321), length of carapace on median line 15.5, to end of horns 17.7, width of carapace 11.7 mm.

Range.—From Cape St. Roque, Brazil, to northern Patagonia. Depth, 7 to 30 fathoms.

Material examined.—See table, page 280.

PELIA TUMIDA (Lockington)

Plate 99, figs. 2 and 3

Pisoides? tumidus Lockington, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 30 [3] (type-locality, between tides, near San Diego; type not extant); p. 67 [5], San Bartolomé Bay and Magdalena Bay.

Microphrys tenuidus [error for *tumidus*] (=*Pisoides tenuidus*) Miers, *Challenger* Rept., Zoöl., vol. 17, 1886, p. 83.

Pelia pacifica Rathbun, not A. Milne Edwards, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 90; vol. 21, 1898, p. 573; vol. 38, 1910, p. 572 (part); Harriman Alaska Exped., vol. 10, 1904, p. 174 (part).

Pelia, sp., Rathbun, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 90.

Pelia tumida Rathbun, Harriman Alaska Exped., vol. 10, 1904, p. 174.

Pelia clausa Rathbun, Mem. Mus. Comp. Zoöl., vol. 35, 1907, p. 72 (type-locality, "Southern California," really Catalina Harbor, see footnote, p. 178; holotype, Cat. No. 16203, U. S. N. M.).

Diagnosis.—Greatest width of carapace about two-thirds its greatest length. Outer margins of rostral horns either parallel or diverging anteriorly. Frontal region strongly deflexed. Of the basal antennal article only the spine or tooth is visible from above.

Description.—Gastric region much elevated, rounded and often furnished with a small tubercle at the anterior summit. Branchial regions inflated; cardiac region with a small rounded elevation. Rostrum depressed, elongated, varying from one-third in the old male to one-fourth the length of the remainder of the carapace, and bifurcated for about half its length; horns narrow, divergent, and slightly upturned at the tip. The basal antennal article is scarcely visible from above except for the spine or tooth at the antero-external angle.

Chelipeds not so long as first ambulatory leg, stout in well developed males; merus with margins sparingly granulate; hand oblong, compressed, inflated, the edges obtuse and subparallel although slightly arcuate; fingers gaping at base, neatly fitting together along the denticulate distal half of their inner margins; a broad, truncate molariform tooth or tubercle on the inner margin of the movable finger near the base is an important feature of the gape. In the undeveloped males (the *clausa* form) the chelipeds are weak as in the adult females, the chelae small, palms tapering distally, the fingers meeting except for a very slight gape in the basal third or fourth.

Color.—Chelipeds speckled with dark brownish as far as the middle of the fingers, especially the dorsal aspect; speckles few on wrist.

Measurements.—Male (50962), length of carapace on median line 17.4, to end of horns 19.2, width of carapace 13 mm.

Range.—From Santa Monica Bay, California, to Magdalena Bay, Lower California, and Gulf of California, Mexico. Shallow water to 50 fathoms.

Material examined.—

CALIFORNIA

Venice Breakwater; *Anton Dohrn;* from Venice Marine Biol. Sta.: West end under rocks; January 3, 1912; P. S. Barnhart; 1 female (50217). February 19, 1913; J. Ross Beck; 1 male, soft shell (50219). October 16, 1913; P. S. Barnhart; 1 ovigerous female (50221). October 29, 1913; P. S. Barnhart; 5 males, 1 female (50218). 1 male (45585).

Between Venice and San Pedro; June 18, 1913; *Anton Dohrn* (P. S. Barnhart); from Venice Marine Biol. Sta.; 1 male (50311).

Point Vincente; from rocks; February, 1918; H. N. Lowe; 2 males (51123), nearly of a size, one having well developed chelipeds, the other feeble ones.

Reef Point; July 6, 1917; E. P. Chace; 1 ovigerous female (53985).

San Pedro: H. N. Lowe; 1 male (32971). Vicinity of: E. P. Chace; 1 male (50962).

Long Beach; H. N. Lowe; 6 males, 1 female (46777).

Laguna Beach; W. A. Hilton: 1 male (48908). 1 male (48984), returned to sender. 1 male, 1 ovigerous female (50596).

Santa Catalina Island: Isthmus Harbor; *Anton Dohrn;* from Venice Marine Biol. Sta.; 2 males, 2 females (50005). Catalina Harbor; W. H. Dall: Beach; 18 specimens (16203); 1 male is holotype of *P. clausa.* Depth, 30 to 40 fathoms; 1 male (16204). Avalon Bay; October 22, 1910; *Anton Dohrn* (P. S. Barnhart); from Venice Marine Biol. Sta.; 1 young female (50220). Off Catalina Island; 50 fathoms; H. N. Lowe; 1 male (29957).

San Clemente Island; H. N. Lowe: 1 male (29956).

La Jolla: March 6, 1898; *Albatross;* 1 female (21770). Rocks above Scripps Institution, January 29, 1915; 2 ♀ (Scripps Inst.).

San Diego: 10 fathoms; Henry Hemphill; 1 female (6385). C. R. Orcutt; 6 specimens (16206). Rosa Smith, 1 female (16998). U. S. C. S. S. *Hassler;* 1 male (2046, M. C. Z.).

San Diego County; C. R. Orcutt; 1 male (16205).

Exact locality not given; *Anton Dohrn;* from Venice Marine Biol. Sta.; 1 female (50312).

MEXICO

Gulf of California, near upper end; lat. 31° 22′ 00″ N.; long. 114° 07′ 45″ W.; 17 fathoms; G. brk. Sh.; temp. 65.2° F.; March 25, 1889; station 3026, *Albatross;* 1 ovigerous female (16349).

West of Magdalena Bay; lat. 24° 58′ 15″ N.; long. 115° 53′ 00″ W.; 36 fathoms; Coralline; temp. 64.3° F.; March 2, 1889; station 2989, *Albatross;* 1 male (16348), with abnormal rostrum.

Magdalena Bay, Lower California: 1917; C. R. Orcutt; 1 female, with Rhizocephalid parasite (50639). Lat. 24° 32′ 00″ N.; long. 111° 59′ 00″ W.; 12 fathoms; fne. gy. S.; May 2, 1888; station 2831, *Albatross;* 1 male (21913).

PELIA PACIFICA A. Milne Edwards

Plate 98, fig. 1; plate 99, fig. 1

Pelia pacifica A. MILNE EDWARDS, Crust. Rég. Mex., 1875, p. 73, pl. 16, figs. 3–3*c* (type-locality, Bay of Panama; type in Paris Mus.).—RATHBUN, Harriman Alaska Exped., vol. 10, 1904, p. 174 (part); Mem. Mus. Comp. Zoöl., vol. 35, 1907, p. 72 (part); Proc. U. S. Nat. Mus., vol. 38, 1910, p. 572 (part); not vol. 16, 1893, p. 90, nor vol. 21, 1898, p. 573.

Diagnosis.—Greatest width of carapace about three-fourths its greatest length. Outer margins of rostral horns converging anteriorly. Fingers of mature male unusually narrow, gape correspondingly wide. Frontal region moderately deflexed.

Description.—Carapace shorter and more triangular than in any of the preceding species, the rostrum being much shorter, not more than one-fourth, in the old male, as long as remainder of carapace, its outer margins converging anteriorly, thus carrying out the triangular form of the carapace. Very little of the basal antennal article is visible from above; its outer angle is tipped with a spine.

The chelipeds in the well-developed male are stouter than in the preceding species, and about as long as the first pair of ambulatory legs; palm wider, varying from 0.72 (in the smaller specimen) to 0.81 (in the old) of its superior length; a little narrowed distally and slightly constricted near the fixed finger; fingers widely gaping for half or (in the old) two-thirds of their length, slender, the basal tooth of the dactylus comparatively insignificant, the fixed finger arched very markedly downward in the basal half, thus increasing the gape.

Measurements.—Male (46077), length of carapace on median line 10.5, to end of horns 12.2, width of carapace 9.2 mm.

Range.—From Manzanillo, Mexico, to Panama.

Material examined.—

Manzanillo, Colima, Mexico; on drifted pile; July 17, 1913; C. R. Orcutt; 1 male, 1 female (46077).

Perico Island, Panama; October 26, 1904; *Albatross;* 1 male, 1 female (33393), 1 female (M. C. Z.).

Panama; May, 1869; Dr. Sternberg; 1 male (2043, M. C. Z.).

PELIA PULCHELLA Bell

Plate 241, figs. 1–4

Pelia pulchella Bell, Proc. Zool. Soc. London, vol. 3, 1835 (1836), p. 170 (type-locality, Galapagos Islands; type not extant); Trans. Zool. Soc. London, vol. 2, 1836, p. 45, pl. 9, figs. 2, 2*d*–2*f*.

Diagnosis.—Rostrum long, nearly half as long as remainder of carapace. Basal article of antennae almost wholly exposed in dorsal view.

Description (after Bell).—Carapace pyriform, gibbous, rounded, polished, somewhat hairy; regions elevated, the cardiac region forming a rounded tubercle. Rostrum straight, nearly half as long as remainder of carapace, bifid at extremity, with a slight groove continued backward from the bifurcation. Basal article of antennae almost wholly exposed above, slightly tapering toward its extremity where there is a small external tooth; flagellum extending a little beyond apex of rostrum.

Chelipeds longer than body; arm with a toothed carina above and two carinae beneath, the outer of which is minutely serrated; hands slightly compressed, smooth; fingers, when closed, in contact throughout their whole length, the half toward the apex being serrated, and a tubercle of the immovable finger fitting into a corresponding excavation in the movable one. Ambulatory legs compressed, carinated and hairy above.

Measurements.—Male holotype, length 4 lines (10.16 mm.), width 2½ lines (6.35 mm.).

Locality.—Known only from the unique type taken at the Galapagos Islands, 6 fathoms, sandy mud.

Genus PISOIDES Milne Edwards and Lucas

Pisoides Milne Edwards and Lucas, d'Orbigny's Voy. l'Amér. Mérid., vol. 6, pt. 1, 1843, p. 10; type, *P. tuberculosus* Milne Edwards and Lucas.—Dana, U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 79.

Carapace much longer than wide, trianguliform, slightly swollen. Gastric and cardiac regions very apparent and separated from each other and from the branchial regions by rather deep furrows. Rostrum directed a little obliquely downward and armed with two very long and moderately divergent spines. Eyes imperfectly retractile, peduncle short, constricted at middle, its base filling the orbital cavity. This last has a cut on its upper margin, but is devoid of a tooth above its inner angle; below, the cavity is incomplete but there is a small spine near the base of the antenna and a large and very sharp tooth at the outer orbital angle. Basal article of antenna a little longer than wide, and having at its antero-external angle a small tubercle which is advanced between the next or movable article and the orbit; this article is much longer than the preceding, wide, and very depressed; next article shorter, reaching about to end of rostrum, or even surpassing it. Antennules and mouth parts as in *Pisa*. Epistome almost linear. Sternal plastron as long as wide.

Chelipeds short, rather stout; fingers slender, elongate, slightly curved and finely denticulate on the inner border. Legs diminishing progressively in length, the first being longer than the cheliped; merus and carpus very wide and compressed, propodus cylindrical, dactylus short, very crescentic, unarmed below. Abdomen 7-segmented in both sexes. (After Milne Edwards and Lucas.)

Known only on the Pacific coast of South America from Panama to the Straits of Magellan, including the Galapagos Islands.

PISOIDES EDWARDSII (Bell)

Plate 236

Hyas edwardsii BELL, Proc. Zool. Soc. London, vol. 3, 1835 (1836), p. 171 (type-localities, Valparaiso and Galapagos Islands; types not extant); Trans. Zool. Soc. London, vol. 2, 1836, p. 49, pl. 9, fig. 5.

Pisoides tuberculosus MILNE EDWARDS and LUCAS, d'Orbigny's Voy. l'Amér. Mérid., vol. 6, pt. 1, 1843, p. 11; vol. 9, atlas, 1847, pl. 5, figs. 1–1*d* (type-locality, *les côtes du Chili;* type in Paris Mus., cotype in Mus. Phila. Acad. Nat. Sci.).—NICOLET, in Gay, Hist. Chile, Zool., vol. 3, 1849, p. 134.—A. MILNE EDWARDS, Crust. Rég. Mex., 1875, p. 75, pl. 16, figs. 5–5*b*.—LENZ, Zool. Jahrb., Suppl. 5, vol. 2, 1902, p. 757.—RATHBUN, Proc. U. S. Nat. Mus., vol. 38, 1910, pp. 572 and 616.

Pisoides edwardsii DANA, U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 87; atlas, 1855, pl. 1, figs. 2*a* and 2*b*.—MIERS, Proc. Zool. Soc. London, 1881, p. 63.—RATHBUN, Proc. U. S. Nat. Mus., vol. 38, 1910, pp. 572 and 613.

Pisoides edwardsi MIERS, Proc. Zool. Soc. London, 1881, p. 66.

Diagnosis.—No preocular spine; postocular spine large, sharp. Basal antennal article nearly as broad as long, and with a prominent tubercle at its antero-external angle. Rostral horns flat.

Description.—Carapace and ambulatory legs covered with a short, dense velvet in the midst of which are some elongate hairs recurved at the end. Carapace dotted beneath with small round pits which serve for the insertion of the hairs. Branchial, gastric and genital regions ornamented with prominent tubercles. Anterior margin of merus of chelipeds armed at the extremity with a strong spine. Merus of first ambulatory leg strongly compressed, its upper margin cristate; merus of remaining legs wide, flat and rounded above; on the outer margin of the merus a very pronounced spine especially in the first pair. Carpus short, wide; propodus elongate, cylindrical. Abdomen of both sexes entirely smooth. (Milne Edwards and Lucas.)

Branchial regions tumid, bearing two or three small, faint tubercles. The cardiac region is a broad prominence with rounded surface, and either side posteriorly there is a small tubercle. Gastric region prominent with a low posterior tubercle and another oblong anterior one equally distinct. Intestinal region with a small tubercle. All the tubercles are mostly concealed by the villosity of the surface, so as not to be seen unless it is removed. (Dana.)

Rostrum flat, horns evenly and slightly divergent and setigerous within. Basal article of antenna subquadrate, outer angle projecting; next article twice as long as the second movable one, both flat and ciliate on the outer side, the last one ciliate on both margins; antero-external angle of basal article set with minute spinules or hairs; also a prominence at posterior angle is raggedly but minutely denticulate. Outer maxillipeds pubescent. A fringe of rather short hairs on opposite (upper and lower) margins of legs. (Dana.)

Color.—Carapace and chelipeds yellow tinged with red (M. Edwards and Lucas). Reddish brown; hair brown; hands red (Bell). Chelae bright rose (Miers).

Measurements.—The largest specimen recorded was measured by Dana: Male, Valparaiso, length 16 lines (34 mm.), width 12 lines (25.4 mm.), length of rostrum 4 lines (8.5 mm.). Sex not given, Chili, length 23 mm., width 16.5 mm. (M. Edwards and Lucas). Adult male, Galapagos, length 6 lines (12.7 mm.), width 4 lines (8.5 mm.) (Bell). Immature male, Valparaiso, length 9 lines (19.1 mm.), width 7 lines (14.9 mm.) (Bell).

Range.—Panama to Straits of Magellan; Galapagos Islands.

Localities recorded.—

Panama (A. Milne Edwards). Galapagos Islands (Bell, A. Milne Edwards). Chile (H. Milne Edwards and Lucas, A. Milne Edwards). Iquique (Lenz). Valparaiso (Bell, Nicolet, Dana). Bay of Guajacan (Lenz). Tumbes (Lenz). Talcahuano, in seaweed (Lenz). Calbuco (Lenz). Trinidad Channel, 30 fathoms, sandy (Miers). Port Rosario, 2 to 30 fathoms, sand and rock (Miers).

Material examined.—

Chile; Guérin collection, No. 16; T. B. Wilson, donor; 1 male, "type" of *Pisoides tuberculosus* (Mus. Phila. Acad. Nat. Sci.); "*rarissima.*" This may be one of the original type specimens; it is larger than the specimen measured by Milne Edwards and Lucas, being 30 mm. in total length and 14.6 mm. in width. About three obscure gastric tubercles form a median ridge, and the same number are in a longitudinal row on the middle of the branchial region. Rostral horns acuminate, being narrow spines; outer edges almost parallel to each other. No preorbital spine; postorbital spine directed obliquely upward and forward, but not outward. Basal antennal article not visible in the dried specimen; first movable article laminate, appearing half as wide as rostrum. Fingers narrowly gaping in basal third.

Genus NOTOLOPAS Stimpson

Notolopas Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 10, 1871, p. 96; type, *N. lamellatus* Stimpson.—Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 64.

Carapace subpyriform, moderately convex, and rounded posteriorly; posterior margin more or less distinctly carinated, dorsal surface bearing a few spines. Rostrum well developed, entire at base, then bifurcating, horns divergent. Supraocular eave well developed, furnished anteriorly with a small spine or tooth; a small tooth between the eave and the postocular cup, which is hollowed for the eye; inferior sinus broad. Basal article of antenna broad, a spine or tooth at antero-external angle and a lobe or tooth on outer margin; following articles slender, not concealed by rostrum. Anterior margin of merus of outer maxilliped truncate, inner angle variably emarginate.

Chelipeds of adult male stouter than legs, palm slightly compressed, fingers gaping at base, Ambulatory legs very slender, subcylindrical, first pair considerably longer than the second, last three pairs diminishing regularly in length; dactyli curved and nearly as long as the propodi.

Inhabits both coasts of middle America, from North Carolina to Bahia, Brazil, and from Manzanillo, Mexico, to Panama.

KEY TO THE SPECIES OF THE GENUS NOTOLOPAS

A¹. A sharp, lamellate carina across posterior end of carapace. Basal antennal article wide, having a broad shallow lobe on outer margin.
lamellatus, p. 287.

A². No sharp carina across posterior end of carapace. Basal antennal article of moderate width, having a tooth or small lobe on outer margin.
brasiliensis, p. 288.

Species on both sides of the continent: *lamellatus*.

NOTOLOPAS LAMELLATUS Stimpson

Plates 81 and 238, fig. 1

Notolopas lamellatus Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 10, 1871, p. 97 (type-localities, Panama and Manzanillo; types not extant).—Miers, *Challenger* Rept., Zool., vol. 17, 1886, pp. 64 and 65, pl. 8, fig. 1c.

Diagnosis.—A sharp, lamellate carina around carapace above posterior margin. A broad, shallow (little projecting) lobe on outer margin of basal antennal article. Antero-internal outline of merus of maxilliped oblique, slightly notched.

Description.—Posterior half of dorsum flattened, enclosed by a ridge which posteriorly becomes a broad concave lamella projecting over the posterior margin; four equidistant spines on this margin, two median, the gastric spine at the highest point of the carapace, the other two branchial, above the widest part of the carapace. Cardiac region a rounded nodule. Two small protogastric spines. Rostrum bifurcate for half its length, horns tapering, acute, widely divergent. A short but well marked supraocular spine. Basal antennal article much widened, especially posteriorly where it forms a strong lobe on the margin; tooth at antero-external angle a little more advanced than that at antero-internal angle. A small lobe behind outer margin of basal article and in transverse line with antennal glands. Antero-internal outline of merus of maxilliped oblique, slightly notched. Chelipeds of largest male examined, which may not have reached its full development, just as long as next leg, palm slightly narrowed distally, gape of fingers slight. Abdomen of male widened a little at end of sixth segment.

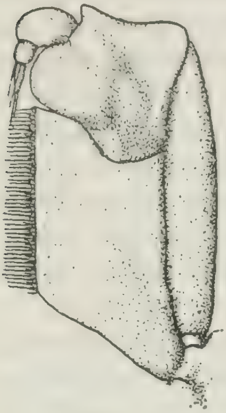

FIG. 95.—NOTOLOPAS LAMELLATUS, FEMALE (48799), MAXILLIPED, × 11.5

Measurements.—Male (48805), length of carapace on median line to posterior spine 17.3, length to tip of horn 20.2, width of carapace exclusive of spines 10.6 mm. Largest specimen, a female (48799), length of carapace on median line to posterior spine 20.7, length to tip of horn 25, width of carapace exclusive of spines 14 mm.

Range.—From Manzanillo, Mexico, to Panama. Off Beaufort, North Carolina.

Material examined.—

Corinto, Nicaragua; J. A. McNiel; 1 female (4791, M. C. Z.).

Carbon Island, Corinto, Nicaragua; J. A. McNiel; 1 immature female (4792, M. C. Z.).

Puntarenas, Costa Rica; P. Biolley, collector; gift of J. F. Tristan; 4 males, 1 female, all small (49087).

Taboga Island, Panama; June, 1914; J. Zetek; 1 male (48805).

Panama City; Oct. 5, 1914; J. Zetek; 1 ovigerous female (48799).

Panama; *Hassler* Exped.; 2 males, 2 females (1 with *Sacculina*) (2042, M. C. Z.).

Off Beaufort, North Carolina; Fish Hawk; 1 ovigerous female (52758).

NOTOLOPAS BRASILIENSIS Miers

Plate 237; plate 238, figs. 2–4

Notolopas brasiliensis MIERS, *Challenger* Rept., Zool., vol. 17, 1886, p. 64, pl. 8, figs. 1–1*b* (type-locality, Bahia, 7 to 20 fathoms; type in Brit. Mus.).

Hyastenus caribbaeus RATHBUN, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 85, pl. 6, fig. 2 (type-locality, Sabanilla, Colombia; holotype, Cat. No. 16315, U.S.N.M.).

Diagnosis.—The carina around the posterior end of the carapace above the margin is low, blunt and ill-defined. A tooth or small, pointed lobe on outer margin of basal antennal article. Antero-internal emargination of merus of maxilliped almost a right angle.

Description.—Differs from *N. lamellatus* in having the large, posterior, dorsal area of the carapace but feebly defined by a low, blunt ridge; the spines are similarly placed. The protogastric tubercles are low. Rostrum bifurcate for more than half its length, varying from three-fourths in the holotype of *caribbaeus* to three-fifths in the paratype; horns variably divergent, slightly so in the figured specimen (pl. 237), more so (about 40°) in the smaller male from Sabanilla, 45° in Miers's type. Tooth on supraocular eave insignificant, more so in large specimens than in Miers's type as figured. Basal antennal article narrower than in *lamellatus*, bearing on its outer margin a tooth which is less prominent with age; tooth at antero-external angle less advanced than that at antero-internal angle. A tubercle instead of a compressed lobe behind outer margin of basal article and in transverse line with antennal glands. Antero-internal notch of merus of maxilliped well made, subrectangular. Chelipeds of well-developed male not quite so long as next leg, palm gradually widened distally; fingers about one-third as long as palm, gaping in proximal half, a tooth on the dactylus in the gape. Sixth segment of abdomen of male with arcuate lateral margins.

Measurements.—Male (16315), holotype of *caribbaeus*, length of carapace on median line to tip of posterior spine 16, length of carapace to tip of horn 23.4, width of carapace 10.5 mm.

Range.—Colombia to Bahia, Brazil. To a depth of 20 fathoms.

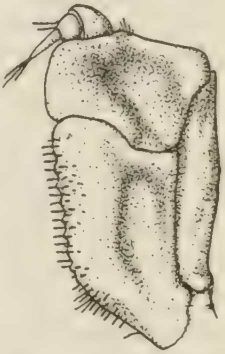

FIG. 96.—NOTOLOPAS BRASILIENSIS, MALE (16315), MAXILLIPED, × 10.66

Material examined.—

Sabanilla, Colombia; 1884; *Albatross;* 2 males, holotype and paratype of *Hyastenus caribbaeus* (16315).

State of Parahyba, Brazil; Mus. Paulista (H. von Ihering); 1 male, No. 936 (returned to sender).

Genus NIBILIA A. Milne Edwards

Nibilia A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 132; type, *N. erinacea* A. Milne Edwards=*antilocapra* (Stimpson).

Carapace pyriform, much swollen, longer than wide. Rostrum bifurcate, horns moderately divergent. Preorbital angle prolonged in a spine. Orbit complete below; orbital border armed with a spine or tooth between the supraocular eave and the postocular cup; a closed fissure between the suborbital border and the basal segment of the antenna. This segment is elongate and bears a strong spine on its outer margin and at its anterior angle; the next article which is cylindrical is inserted beside the rostrum. The merus of the outer maxillipeds has a transverse distal margin, its outer angle is strongly produced sideways, its inner angle is deeply notched.

In the full grown male the chelipeds are longer and stouter than the legs; chela almost cylindrical; fingers in contact in the distal half, not hollowed at tips.

Contains only one species.

NIBILIA ANTILOCAPRA (Stimpson)

Plates 102, 103 and 239

Herbstia . . . Schramm, in Desbonne and Schramm, Crust. Guadeloupe, 1867, p. 17, pl. 7, fig. 23.

Pisa antilocapra Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 110 (type-localities, off Carysfort Reef, 52 and 60 fathoms; off Alligator Reef, 118 fathoms; types not extant).—A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl., vol. 47, 1923, pl. 11, figs. 4 and 5; pl. 12, fig. 3, text-fig. 19.

Pisa praelonga Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 111 (type-localities, off Alligator Reef, 118 fathoms; off Tennessee Reef, 124 fathoms; types not extant).—A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 384, pl. 11, figs. 6 and 7; pl. 12, fig. 4.

Nibilia erinacea A. Milne Edwards, Crust. Rég. Mex., 1878, p. 133, pl. 25 (type-locality, "Guadeloupe, dans le Canal de Saintes et à Marie-Galante, sur la côte de Capesterre;" from fish-traps set in rather deep water; type in Paris Mus.).

Diagnosis.—Rostrum deeply bifurcate; carapace multispinous; orbit with a spine or tooth between preocular eave and postocular cup.

Description.—Carapace very spinous. Rostrum horizontal, undivided at base, but bifurcate for the greater part of its length, the horns varying from three-fifths to four-fifths of the total length of rostrum. Preorbital spine ascending, slightly curved, not as advanced as the base of the horns; behind it a small spine on the supraocular eave; a triangular spine or tooth on the supraorbital border; postocular cup terminating in a spine. A short spine just outside the posterior end of the basal antennal article, and behind this a tubercle, both in line with a prominent spine at the angle of the buccal cavity. Carapace bristling with unequal spines; on the gastric region about 18 of fair size with some smaller ones interspersed; one of the strongest occupies the summit of the gastric region and is the center of a circle of smaller spines. The same arrangement is seen on the cardiac region. Certain of the hepatic and branchial spines are very long; one marginal hepatic spine is the longest spine behind the orbits; 4 long spines form a transverse diamond on the intestinal region; a regular series of spines runs above the posterolateral mar-

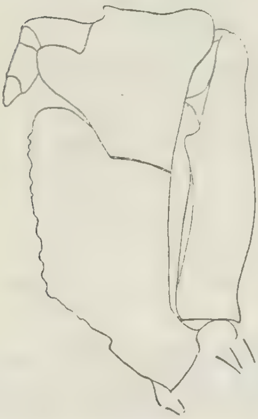

Fig. 97.—Nibilia antilocapra (14091), maxilliped, × 3.6

gin of the carapace. Pterygostomian region armed with 2 rows of spines. Maxillipeds and sternum smooth. Three spines on each of first three abdominal segments of male.

Manus nearly as long as merus, nearly smooth, a few spines near articulation with carpus; merus and carpus rough with spines above and below. In the old male (see Schramm's pl. 7), the fingers gape for half their length, and there is a small but well defined molariform tooth on the dactylus within the gape.

Ambulatory legs long and slender; a few spines longitudinally arranged on merus and carpus; dactylus long, stout, unarmed and short-haired.

The young and half-grown are covered with very short hair, while the old are nearly bare except for the ambulatory dactyli.

Measurements.—The largest male noted is that described by Schramm: length of carapace including rostrum 120 mm., greatest width 82, length of rostrum 22, of horns 18, of chelipeds 220, of chelae 110, of movable finger 38, of first ambulatory 190 mm. Length of youngest specimen, female (9688), 20.5, width 9.4, length of horns 6.4 mm.

Range.—From off Cape Hatteras, North Carolina, to Gulf of Mexico and Windward Islands. Depth, 52 to 140 fathoms.

Material examined.—Off Cape Hatteras, North Carolina; *Albatross:* Lat. 35° 11′ 30″ N.; long. 75° 05′ 00″ W.; 59 fathoms; crs. S. bk. Sp.; temp. 75° F.; October 21, 1884; station 2301; 1 male, 1 female (7256). Lat. 35° 08′ 00″ N.; long. 75° 05′ 30″ W.; 63 fathoms; gy. S. brk. Sh.; October 17, 1885; station 2595; 1 male, 1 female (14091).

Gulf of Mexico: East of Delta of Mississippi River; lat. 29° 15′ 00″ N.; long. 88° 06′ 00″ W.; 60 fathoms; bu. M.; temp. 61. 8° F.; Mar. 4, 1885; station 2386, *Albatross;* 1 young female (9688).

Windward Islands; 1879; U. S. C. S. S. *Blake:*

Off St. Vincent: Lat. 13° 07′ 55″ N.; long. 61° 05′ 36″ W.; 124 fathoms; Co.; temp. 57.5° F.; March 3; station 269; 1 female (2865, M. C. Z.). Lat. 13° 06′ 45″ N.; long. 61° 06′ 55″ W.; 87 fathoms; Co.; temp. 62° F.; February 21; station 232; 1 ovigerous female (2869, M. C. Z.).

Off Barbados: Lat. 13° 05′ 00″ N.; long. 59° 39′ 40″ W.; 140 fathoms; Co. brk. Sh.; temp. 56.5° F.; March 10; station 299; 1 ovigerous female (2864, M. C. Z.); 2 males, 2 ovigerous females (2866, M. C. Z.). Lat. 13° 02′ 36″ N.; long. 59° 37′ 45″ W.; 123 fathoms; R.; temp. 56.5° F.; March 10; station 297; 1 male (2867, M. C. Z.).

Remarks.—Pisa antilocapra appears to have been founded on a young specimen of this species, while the type of *P. praelonga* was a much smaller (scarcely 10 mm. long) and consequently narrower specimen.

Genus LEPTECES Rathbun

Lepteces Rathbun, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 83; type, *L. ornatus* Rathbun.

Carapace subpyriform or triangulate, slightly convex, tuberculate; preocular spine present. Rostral spines divergent. Orbit with two hiatuses above and one below. Antennae with a spine at antero-external angle of basal segment, movable portion visible in dorsal view at sides of rostrum. Outer maxilliped with antero-external angle strongly produced and rounded, inner angle notched. Chelipeds more slender than ambulatory legs; manus more slender than merus; fingers very short, meeting when closed. Ambulatory legs spinous, diminishing rapidly in length from first to fourth leg.

Contains only one species.

LEPTECES ORNATUS Rathbun

Plate 244, fig. 2

Lepteces ornatus Rathbun, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 84, pl. 6, fig. 1 (type-locality, off Arrowsmith Bank, Yucatan; holotype, Cat. No. 9546, U.S.N.M.).

Diagnosis.—Chelipeds filiform. Flat-topped mushroom tubercles form a regular pattern on carapace. A lobe between supraocular eave and exorbital tooth.

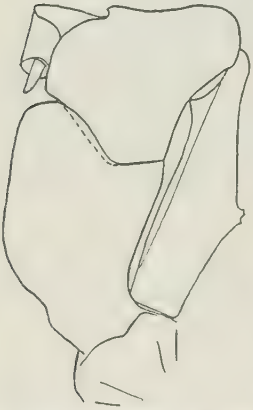

Fig. 98.—Lepteces ornatus (9546), maxilliped, × 18

Description.—Entire surface except chelae granulate. Carapace ornamented with tubercles of two kinds; first and most conspicuous, raised mushroom-like tubercles, each surmounted by a flat, circular, granulate disk. Tubercles of this sort with disks overlapping surround cardiac region and outline inner margin of branchial region; one on posterior edge of gastric region, four follow postero-lateral margin, two arranged transversely on the intestinal region, while a line of four runs almost transversely across each hepatic region and onto the gastric; many additional smaller tubercles of this sort. The second variety of tubercle is smaller but higher, more like a cylindrical spine, granulate and surmounted by a few long hairs; four such tubercles on gastric region, two being median, six on branchial region, two or three on cardiac region, three on posterior margin. Entire surface between and beneath the tubercles is crowded with stellar granules, varying in size.

Rostral spines regularly tapering, divergent, with long hairs especially on inner margins. Preocular spine strongly curved upward (concave above), at an angle of about 45 degrees with rostrum, acute, a few long hairs at tip.

Basal segment of antenna with outer margin convex, a stout spine at antero-lateral angle, directed forward; flagellum surpassing rostrum. Epistome sharply recessed at middle.

Chelipeds weak in both sexes, much shorter than next leg; merus cylindrical, very rough; carpus granulate; palms smooth, tapering to the fingers, which are one-fifth as long as upper margin of palm. Ambulatory legs stout, somewhat angled, armed with two longitudinal rows of spines and rough with two sorts of tubercles; dactyls finely roughened, tips horny.

Measurements.—Male holotype, length of carapace 17, width 9 mm.

Range.—Known only from the type-specimens, off Arrowsmith Bank, Yucatan; lat. 20° 59′ 30″ N.; long. 86° 23′ 45″ W.; 130 fathoms; Co.; January 22, 1885; station 2354, *Albatross;* 2 males, 6 females (9546).

Genus **HERBSTIA** Milne Edwards

Herbstia Milne Edwards, Hist. Nat. Crust., vol. 1, 1834, p. 301; type, *H. condyliata* (Fabricius). Name not invalidated by *Herbstium* Leach, 1823.

Rhodia Bell, Proc. Zool. Soc. London, vol. 3, 1835, p. 169; type, *R. pyriformis* Bell.

Herbstiella Stimpson, Ann. Lyc. Nat. Hist. N. Y., vol. 10, 1871, p. 93; type, *H. depressa* Stimpson.

Fisheria Lockington, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 72 [10]; type, *F. depressa* Lockington = *Herbstia camptacantha* (Stimpson), not *H. depressa* (Stimpson).

Carapace broadly triangular or subpyriform, tuberculated or spinose. Rostrum short, horns acute, vertically compressed and dilated at base. Orbits complete, shallow, with or without a preorbital spine. Eyes short, not entirely concealed when retracted. Basal antennal article moderately dilated and armed with an antero-external spine, the distal portion not entirely covered by the rostrum. Merus of maxillipeds distally truncated and not produced at outer angle. Ambulatory legs rather slender, subcylindrical and of moderate length; dactyls nearly straight, acute.

East and west coasts of tropical America; Mediterranean and southward along the west coast of Africa.

KEY TO THE AMERICAN SPECIES OF THE GENUS HERBSTIA

A¹. Merus of ambulatory legs armed with spines.
  B¹. Two teeth on outer margin of basal antennal article behind antero-external tooth or spine.
    C¹. First movable article of antenna falling considerably short of tip of rostrum; postocular tooth small, directed forward. **camptacantha**, p. 294.
    C². First movable article of antenna nearly as advanced as tip of rostrum; postocular tooth large, directed obliquely outward___**depressa**, p. 298.
  B². One tooth on outer margin of basal antennal article behind antero-external tooth or spine.

C¹. First movable article of antenna not reaching so far forward as tip of rostrum.

D¹. Palms armed with spines or tubercles above at proximal end. One tooth on movable finger of male in the gape. Supraorbital margin with two teeth between preocular and postocular teeth. **parvifrons**, p. 296.

D². Palms smooth, unarmed. Two teeth on movable finger in the gape. Supraorbital margin with only one tooth between preocular and postocular teeth ---------------------------- **edwardsii**, p. 300.

C². First movable article of antenna overreaching rostrum --- **tumida**, p. 299.

A². Merus of ambulatory legs unarmed.

B¹. Lateral margin of carapace armed with four teeth or spines. Palm with a single spine ------------------------------------ **pyriformis**, p. 301.

B². Lateral margin armed with smaller, more numerous teeth or spines. Rostrum shorter. Palm unarmed ------------------- **pubescens**, p. 302.

Analogous species on opposite sides of the continent: *depressa* (Atlantic); *tumida* (Pacific).

HERBSTIA CAMPTACANTHA (Stimpson)

Plate 105, figs. 1 and 2; plate 240, figs. 9–13

Herbstia parvifrons Stimpson (not Randall), Ann. Lyc. Nat. Hist. N. Y., vol. 7, 1860, p. 185.

Herbstiella camptacantha Stimpson, Ann. Lyc. Nat. Hist. N. Y., vol. 10, 1871, p. 94 (type-localities, Cape St. Lucas and Acapulco; cotype, male, from Acapulco, Cat. No. 991, M. C. Z.).

Fisheria depressa Lockington (*fide* Holmes), Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 72 [10] (type-localities, Port Escondido and San José Island, both in Gulf of California; types destroyed in the San Francisco fire, 1906).

Mithrax armatus? Lockington (not Saussure), Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 70 [8].

Herbstia camptacantha A. Milne Edwards, Crust. Rég. Mex., 1875, p. 78, pl. 18, figs. 3–3*e*.

Herbstia (*Herbstiella*) *camptacantha* Miers, Journ. Linn. Soc. London, vol. 14, 1879, p. 655; *Challenger* Rept., Zool., vol. 17, 1886, p. 49.—Holmes, Occas. Papers California Acad. Sci., vol. 7, 1900, p. 37 (part).

Diagnosis.—Palm unarmed. Three spines on outer margin of basal antennal article, including that at anterior angle; first movable article falling considerable short of tip of rostrum.

Description.—Carapace slightly convex, surface regularly and conspicuously punctate; cervical suture deep and well marked, sulci separating branchial from cardiac region very shallow, no sulcus between branchial and intestinal region, which is rather flattened. Twenty small tubercles on carapace not including marginal spines: Five tubercles on gastric region, of which four are in a transverse line, the two on either side of middle approximated; three on cardiac region, two on intestinal region, five on each branchial region. On the margin, 14 spines on each side behind orbit, 5 antero-lateral, 9 postero-lateral; posterior spines very small, blunt or tuberculiform, anterior ones larger. A similar spine and two smaller ones on subhepatic region; oblique ridge separating pterygostomian from subhepatic region armed with five spines, the anterior three small and toothlike. Horns rather large and divergent, forming more than half length of rostrum, their tips as well as those of the antennal spines bent inward. All of the spines are much more acute in young specimens than in adults.

Chelipeds long, merus armed with numerous (about 13) blunt spines on outer side; carpus tuberculated above; hand large, compressed, perfectly smooth and unarmed above and below; fingers less than half as long as palm, and gaping; the dactylus bears a strong truncated tooth at middle. Merus of ambulatory legs armed with 7 to 10 spines along the upper edge, and two or three below near the extremity; carpus slightly tuberculated, propodus unarmed.

Adult males entirely naked, young and females frequently pubescent. (After Stimpson.)

The supraorbital border bears two small teeth, of which the outer is the larger. Basal antennal article armed with three spines on the orbital border, counting the antero-external spine. Carpus of cheliped smooth. (A. Milne Edwards.)

Notes on cotype from Acapulco.—The specimen is now in poor condition. Of the five antero-lateral marginal spines, the single hepatic spine is the largest. The nine postero-lateral spines or spinules are very small. Of the dorsal branchial spines three form an arc parallel to the outer margin and are stouter and more conical than any other branchial spines. The penult segment of the male abdomen is widest near its distal end.

Color.—A light flesh tint (Lockington, as *armatus*). In spirits bright red, manus, under sides of legs and buccal apparatus especially bright (Lockington, as *depressa*).

Measurements.—Length of carapace of adult male, type, 17.1 mm. (.675 inch), width 14.4 mm. (.57 inch) (Stimpson). Female, Mazatlan, length of carapace 32 mm., width 30 mm. (Lockington, as *Mithrax armatus*?).

Range.—Cape St. Lucas to Acapulco, Mexico (Stimpson). Mazatlan (Lockington, as *armatus*). Port Escondido and San José Island, Gulf of California (Lockington, as *depressa*). Patos Island, in upper half of Gulf.

Holmes[37] extends the range of this smooth-handed species into California; but all the Californian specimens examined by the writer 7.5 mm. long and over show spines or spinules on the proximal upper margin of the palm and should be referred to the following species.

Material examined.—Acapulco, Mexico; A. Agassiz, collector; one male (991, M. C. Z.); labeled by Stimpson "*Herbstia parvifrons.*"

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[37] Occas. Papers California Acad. Sci., vol. 7, 1900, p. 37.

and is apparently that type-specimen of *H. camptacantha* which was measured by Stimpson, as given above.

Patos Island, anchorage; 4.5 fathoms; May 23, 1921; Fred Baker, California Academy Expedition; one young female (California Acad.), damaged, and having a soft, hairy shell. It belongs, however, to the group having the antennal spine long and the rostral spines long, regularly tapering and divergent. The legs are transversely banded with an orange color when preserved; the propodal articles are longer and slenderer than in the young of *parvifrons* Randall.

HERBSTIA PARVIFRONS (Randall)

Plate 106

Herbstia parvifrons RANDALL, Journ. Acad. Nat. Sci. Philadelphia, vol. 8, 1839, p. 107 (type-locality, western America; holotype in Mus. Phila. Acad. Nat. Sci.).—HOLMES, Occas. Papers California Acad. Sci., vol. 7, 1900, p. 38, and synonymy.

Rhodia parvifrons RATHBUN, Amer. Nat., vol. 34, 1900, p. 511; not synonymy.—WEYMOUTH, Leland Stanford Jr. Univ. Publ., Univ. Ser. No. 4, 1910, p. 34, pl. 7, fig. 18; not all synonymy.

Herbstia (Herbstiella) camptacantha HOLMES, Occas. Papers California Acad. Sci., vol. 7, 1900, p. 37 (part).—RATHBUN (not Stimpson), Proc. U. S. Nat. Mus., vol. 16, 1893, p. 79 (part).

Diagnosis.—Palm armed with spines or spinules at the proximal end of its upper margin. Two spines on outer margin of basal antennal article, including that at anterior angle; first movable article falling short of tip of rostrum.

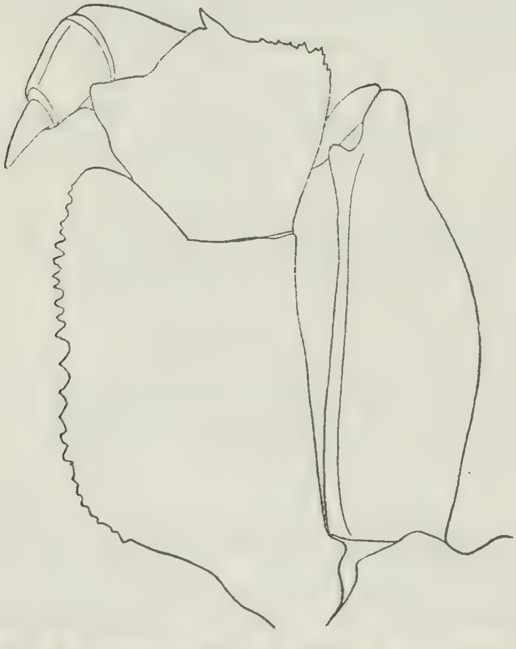

FIG. 99.—HERBSTIA PARVIFRONS (32962), MAXILLIPED, × 6.4

Description.—The description given by Stimpson for *Herbstiella camptacantha* applies very well to the Californian species here called *parvifrons* except that in place of two of the dorsal branchial tubercles there are spines; spines of arm more numerous than in *camptacantha* and in two adjacent and irregular rows, 12 or 13 in the outermost row, 5 or 6 in the other row, 2 spines on inner margin just distad of the middle; palm not unarmed but furnished on the proximal two-fifths of the upper margin with 5 or 6 spines, present not only in the adult but as spinules, fewer in number, in the young, down to a carapace length of 7.5 mm.; spines on upper edge of merus of ambulatory legs 9 to 12, instead of 7 to 10, with 1 to 3 below near the extremity (2 to 3 in *camptacantha*), obsolescent on last leg; carpus not tuberculated, but armed in first two pairs with a single spine at inner distal angle of upper surface, unarmed in last two pairs; adults as well as young hairy.

The basal antennal segment is armed with two spines on the orbital border, counting the antero-external spine, while A. Milne Edwards figures 3 for *camptacantha*.

Color.—Carapace a light tan mottled with dark brown; ambulatory legs barred with reddish brown; chelipeds, excepting the light tips of fingers, a still more pronounced red (Weymouth). Large male in formalin (32962), a brilliant crimson all over.

Measurements.—Male (32962), total length of carapace 43.3, width 41.6 mm. Male (23064) total length of carapace 21.4, width 18.8 mm.

Range.—Monterey Bay, California (Weymouth) to Magdalena Bay, Lower California.

Material examined.—

"Western America"; T. Nuttall; 1 female, holotype (Mus. Phila. Acad. Nat. Sci.).

San Pedro, California; H. N. Lowe; 1 young male (32980).

Long Beach, California; H. N. Lowe; 1 young male (46757).

Laguna Beach, California; W. A. Hilton; 2 ovigerous females (48913, 50598).

San Pedro to Santa Catalina Island, California; Nov. 27, 1913; *Anton Dohrn;* from Venice Marine Biological Station; 2 young (50263).

Isthmus Harbor, Santa Catalina Island, California; Venice Marine Biological Station; 1 young male (46416).

Catalina Harbor, Santa Catalina Island, California: P. S. Barnhart, *Anton Dohrn;* from Venice Marine Biological Station; 3 young males, 2 young females (50256). Beach; W. H. Dall; 1 young female (16320). Depth, 30 to 40 fathoms, sandy mud; W. H. Dall; 3 young (16321).

San Clemente Island, California; H. N. Lowe; 2 males (23064, 32962).

San Diego County, California; C. R. Orcutt; 1 young male (16323).

Southern California: *Anton Dohrn;* Venice Marine Biological Station; 1 young male, 1 young female (50255). W. H. Dall; 3 young (16322).

Lower California, Mexico; off Magdalena Bay; 1889; *Albatross:* Lat. 24° 58′ 30″ N.; long. 115° 52′ 30″ W.; 34 fathoms; coralline; temp. 63.9° F.; March 2; station 2988; 1 young female (16346). Lat. 24° 58′ 15″ N.; long. 115° 53′ 00″ W.; 36 fathoms; coralline; temp. 64.3° F.; March 2; station 2989; 1 young male (16345).

HERBSTIA DEPRESSA Stimpson

Plate 104, fig. 1

Herbstia depressa Stimpson, Ann. Lyc. Nat. Hist. N. Y., vol. 7, 1860, p. 185 [57] (type-locality, St. Thomas; type not extant).—Rathbun, Univ. Iowa Studies Nat. Hist., vol. 9, No. 5, 1921, p. 81, pl. 2, fig. 4.

Herbstiella depressa Stimpson, Ann. Lyc. Nat. Hist. N. Y., vol. 10, 1871, p. 93.

?Herbstia (*Herbstiella*) *depressa?* Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 51, pl. 7, fig. 2.

Diagnosis.—Palm unarmed. Two spines on outer margin of basal antennal article, including that at anterior angle; first movable article advanced nearly to tip of rostrum.

Description.—Carapace much depressed, generally covered with sordes adhering to a slight pubescence easily detached, beneath which the surface is glabrous and less tuberculous than in *H. camptacantha*. A median protuberance on the gastric, and one on the cardiac region; two tubercles on the intestinal region in a transverse row. Lateral and posterior margins armed with small subspiniform tubercles. A stout spine on the hepatic region. Rostrum rather short and broad, cleft for one-half its length; horns triangular, acute. Frontal region and surface of rostrum with a median longitudinal sulcus between two short prominent ridges. Preorbital teeth, orbits and antennae nearly as in *camptacantha*. Basal spine of antennae long, projecting almost as far as horns of rostrum. Exognath of external maxillipeds broad, fusiform, almost angular at middle of external margin.

Chelipeds shorter than next leg; merus armed with one row of spines above, elsewhere smooth; carpus with numerous very short spines on upper surface; hand glabrous. Ambulatory legs slender, hairy above; second pair two-thirds longer than carapace; merus of all armed with spines above, sometimes below. (After Stimpson.)

In a larger specimen than those above described there are four additional tubercles or granules forming a transverse oblong on the branchial region, two of the granules near the inner angle of this region and the other two in a line posterior to the middle of the cardiac region; also on dorsal surface a granule which forms a triangle with the two marginal spines at the widest part of the carapace; two teeth on outer margin of basal antennal segment; seven spines and one spinule on merus of cheliped, about 12 spinules and tubercles on wrist.

Measurements.—Male type (Stimpson), length of carapace 9.6 mm. (0.38 inch), width 7.6 mm. (0.3 inch). Ovigerous female, Barbados, length including horns 14.8, median length 14, width 12 mm.

Range.—St. Thomas; Barbados; Curaçao. I think it very doubtful if the specimen figured by Miers as a possible *depressa* is really one; it lacks a preorbital spine and the rostral horns are cut too deep. It is from Barra Grande, Brazil, lat. 9° 05′ 00″ to 9° 10′ 00″ S.;

long. 34° 50′ 00″ W. to 34° 53′ 00″ W., 30 to 350 fathoms, station 122, *Challenger*.

Material examined.—

St. Thomas; 1 ovigerous female (Copenhagen Mus.).

Barbados; May 15, 1918; Biol. Exped. State Univ. Iowa; 1 ovigerous female (Mus. S. U. I.).

Caracas Bay Curaçao; from sponge; May 10, 1920; C. J. van der Horst; 1 male, 1 female (Amsterdam Mus.), 1 female (55768).

HERBSTIA TUMIDA (Stimpson)

Plate 105, figs. 5 and 6

Herbstiella tumida Stimpson, Ann. Lyc. Nat. Hist. N. Y., vol. 10, 1871, p. 95 (type-locality, Manzanillo, Mexico; type not extant).

Herbstia (*Herbstiella*) *tumida* Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 49.

Diagnosis.—Basal article of antenna very little, if any, wider posteriorly than anteriorly; a small tooth at insertion of next article; antero-external spine directed strongly outward as well as forward; first movable article overreaches rostrum.

Description.—Female: Body and feet pubescent. Carapace convex with the regions more protuberant than in *camptacantha* or *depressa*. There are indications of tubercles on the upper surface, distributed as in *camptacantha*, but they are faint protuberances rather than tubercles, except the two on the intestinal region, which are small but distinctly prominent. There is a minute sharp spine at the anterior end of the branchial region and one on the hepatic region. On the antero-lateral margin there are no distinct spines, but the rounded surface is covered with minute, sharp tubercles. On the postero-lateral margin about 10 minute spines, the anterior one largest. Horns of rostrum small, acute, and placed close together; they form less than half length of rostrum. Basal article of antennae short and broad, with a sharp projection at insertion of movable part of antennae; antero-external spine straight, acute and pointing obliquely outward; the other spines shorter than in the allied species.

Merus of chelipeds armed above with 8 acute spines; carpus with one minute spine above and a slight crest on outer side; hand unarmed. Ambulatory legs with ten long, slender spines above and 2 or 3 below. (After Stimpson.)

In a female from Gulf of California the mesogastric and cardiac protuberances are high and surmounted by a strong tubercle; the rostral horns are not contiguous but have a narrow interspace with subparallel sides; preocular spine short, stout, suberect, not overlapping the antennal spine. Behind it are two small teeth and a V-shaped sinus next the postocular tooth; on the lower margin of the orbit there is a strong tooth; on the outer margin of the basal antennal article two small denticles.

Compared to *H. depressa*, the carapace is narrower, also the ischium of the maxillipeds; antennae longer and fringed with longer hair.

Measurements.—Female, Gulf of California, length of carapace to tip of horn 13.5, width 10.7 mm.

Range.—Gulf of California and Manzanillo, Mexico.

Material examined.—Gulf of California; 1 female (Amer. Mus. Nat. Hist.).

HERBSTIA EDWARDSII Bell

Plate 105, figs. 3 and 4; plate 240, figs. 1–4

Herbstia edwardsii Bell, Proc. Zool. Soc. London, vol. 3, 1835 (1836), p. 170; Trans. Zool. Soc. London, vol. 2, 1836, p. 46, pl. 9, figs. 3, 3*g*–3*i* (type-locality, Galapagos Islands, 6 fathoms; coral sand; type not extant).

Herbstiella edwardsii Stimpson, Ann. Lyc. Nat. Hist. N. Y., vol. 10, 1871, p. 93.

Diagnosis.—Two teeth in the gape of movable finger of male. Supraorbital margin with only one tooth between preocular and postocular teeth. Palms smooth, unarmed.

Description.—Carapace depressed, much rounded, postfrontal portion nearly circular but rather narrowed forwards; minutely punctate. Four small tubercles transversely placed on gastric region, several similar ones elsewhere especially on branchial regions and lateral margin. Front moderately prominent, rostrum very small, horns pointed and a little flattened. Orbits large, furnished with a tooth at upper, inner angle, another at outer angle, and a third, small and rounded, beneath; between which and the basal article of the antenna there is a considerable hiatus. Basal article rather broad, with a large tooth at the antero-external angle and a smaller one behind it on the margin; next two articles cylindrical, the last extending a little beyond the rostrum.

Chelipeds of male more than twice as long as the postfrontal portion of carapace, rather robust, and nearly cylindrical; hand rather larger than the other segments, smooth; dactylus with two teeth (in Bell's figure) in the gape, immovable finger with a strong tooth between the two above. Legs sparsely hairy, merus with a row of small spines above. (Bell.)

Notes on a female from James Island.—The tubercles of the dorsal surface of the carapace are much more obscure than represented by Bell; there are 7 tubercles on the intestinal region arranged in 2 transverse rows, 4 in the anterior row and 3 in the posterior. Of the marginal spinules that on the hepatic region is largest and sharpest. On the upper margin of the orbit a small blunt tooth between the preocular and postocular teeth. The tooth on outer margin of basal antennal article is acute. The fingers of the feeble chelipeds of the female are without enlarged teeth.

Color.—Grayish brown above, yellowish beneath, chelipeds plumbeous, ambulatory legs somewhat flesh-colored. (Bell.)

Measurements.—Type (Bell), length 17.8 mm. (7 lines), width 16.5 mm. (6½ lines). Female (1879, M. C. Z.), length to tip of horns 10.5, width 8.5 mm.

Range.—Galapagos Islands, to 6 fathoms.

Material examined.—James Island, Galapagos Archipelago; *Hassler* Exped.; 1 ovigerous female (1879, M. C. Z.).

HERBSTIA PYRIFORMIS (Bell)

Plate 104, figs. 2 and 3; plate 240, figs. 5–8

Rhodia pyriformis Bell, Proc. Zool. Soc. London, vol. 3, 1835 (1836), p. 170; Trans. Zool. Soc. London, vol. 2, 1836, p. 44, pl. 9, figs. 1–1*c* (type-locality, Galapagos Islands, 6 fathoms, coral sand; type not extant).

Herbstia pyriformis Stimpson, Ann. Lyc. Nat. Hist. N. Y., vol. 10, 1871, p. 93.

Diagnosis.—Merus of ambulatory legs unarmed. Four lateral teeth or spines. Posterior margin of carapace strongly produced. One spine on palm.

Description.—Male: Carapace pyriform, somewhat depressed, regions slightly and evenly elevated; rostrum about as broad as long, small, consisting of two pointed teeth; lateral margin with four distant, minute teeth or spines; posterior margin strongly produced. Orbits large, with a triangular hiatus above, and a preocular and postocular tooth. Antennae twice as long as rostrum, basal article bidentate, tooth at middle of outer margin shorter than the antero-external tooth which is under and projects beyond the supero-internal angle of orbit.

Arm and wrist hairy and beset with small spines; hand hairy above, smooth. Fingers slender, not gaping, minutely serrated. Ambulatory legs longer than chelipeds, the second pair by nearly one-third; remainder diminishing gradually. They are nearly cylindrical, smooth and hairy. (Bell.)

Notes on a male from James Island.—The median posterior protuberance of the carapace is more abrupt than as figured by Bell and is surmounted by a suberect, conical tubercle with a sharp point. The rostrum is not so deeply bifurcate as in Bell's figure, but each horn is longer than its basal width. The inner margins of the orbits converge anteriorly where they are tipped with a small spine; postocular tooth tipped with a spinule; two supraorbital emarginations between which the margin is transverse, not dentiform. The anterior spine of the basal antennal article is long, straight and acuminate; the other marginal spine is at the posterior end of the segment and is much smaller but also sharp. The lower margin of the orbit is more advanced than the upper and is transverse and slightly sinuous.

The three long margins of the merus of the cheliped are armed with spines; the carpus bears six spines (visible to the naked eye), arranged in two longitudinal series; a similar spine surmounts the condyle of the palm which articulates with the wrist.

Color.—Pink, hairs brown; legs whitish with pink rings or bands.

Measurements.—Type male (Bell), length 20.3 mm. (8 lines), width 15.2 mm. (6 lines). Male (1895, M. C. Z.), length to tip of horns 14.7, width 10.3 mm.

Range.—Galapagos Islands, to 6 fathoms.

Material examined.—James Island, Galapagos Archipelago; *Hassler* Exped.; 1 male (1895, M. C. Z.).

HERBSTIA PUBESCENS Stimpson

Herbstia pubescens Stimpson, Ann. Lyc. Nat. Hist. N. Y., vol. 10, 1871, p. 92 (type-locality, Manzanillo, Mexico; holotype not extant).

Diagnosis.—Merus of ambulatory legs unarmed. Lateral spines more than four. A transverse gastro-cardiac ridge.

Description.—Body covered with a dense, short pubescence, beneath which the carapace is smooth and unarmed, except at the sides, where there are a few minute spines. There are two inconspicuous tubercles in the median line on the gastric region, and a short, transverse, tuberculiform ridge between the gastric and the cardiac region, which latter is somewhat prominent. There is a single small triangular tubercle at the posterior extremity on the intestinal region. Rostrum very short. Chelipeds with merus and carpus armed with spiniform tubercles; hand smooth, unarmed. Ambulatory legs unarmed, pubescent; dactyli very short.

Differs from *H. pyriformis* in its shorter rostrum, and in the spines of the lateral margins of the carapace which are smaller and more numerous. (Stimpson.)

Measurements.—Female holotype, length of carapace 21.6 mm. (0.85 inch), width 17 mm. (0.67 inch).

Range.—Manzanillo, Mexico. Known only from the type-specimen.

Genus MICROPISA Stimpson

Micropisa Stimpson, Proc. Acad. Nat. Sci. Philadelphia, vol. 9, 1857, p. 217; type, *M. ovata* Stimpson; Smithson. Misc. Coll., vol. 49, 1907, p. 10.

Phycodes A. Milne Edwards, Rev. et Mag. de Zool., ser. 2, vol. 21, 1869, p. 374; type, *P. antennarius* A. Milne Edwards. Not *Phycodes* Guenée, 1852 (Lepidoptera).

Apiomithrax Rathbun, Proc. Biol. Soc. Washington, vol. 11, 1897, p. 164; type, *A. antennarius* (A. Milne Edwards).

Carapace broad across the branchial regions, suboval, little convex, more or less spinous, front between the eyes narrow, rostrum short, bifid. Preorbital spine present or absent; a supraorbital fissure and an exorbital tooth present; orbits open below. Eyes retractile but not concealed. Basal article of external antennae armed with a tooth or spine at its external angle; movable portion visible from above. Fingers of adult male touching only at the extremities.

Brazil; West Africa; Cape Verde Islands. Shallow water; 30–180 meters (16–98 fathoms).

MICROPISA VIOLACEA A. Milne Edwards

Plate 101; plate 241, figs. 5–8

Micropisa violacea A. Milne Edwards, Nouv. Arch. Mus. Hist. Nat., Paris, vol. 4, 1868, p. 50, pl. 16, figs. 3–6 (type-locality, Cape St. Vincent, Cape Verde Islands; holotype in Paris Mus.).—A. Milne Edwards and Bouvier, Brach. *Travailleur* et *Talisman*, 1900, p. 130.

Phycodes antennarius A. Milne Edwards, Rev. et Mag. de Zool., ser. 2, vol. 21, 1869, p. 374.

Herbstia violacea Miers, Ann. Mag. Nat. Hist., ser. 5, vol. 8, 1881, p. 206; *Challenger* Rept., Zool., vol. 17, 1886, p. 50.

Diagnosis.—No preocular spine. Marginal spines numerous. Antero-external spine of basal antennal article directed outward and visible from above. Merus and carpus of cheliped nearly smooth.

Description.—Carapace almost as wide as long, covered, as are also the legs and the lower surface of the body with a brown, rather dense velvet. Rostrum divided half way by two short, straight, divergent horns. Orbit large, its supraocular eave little projecting and bearing at its posterior end a sharp spine directed outward and separated by a narrow fissure from the large postorbital spine. This last points forward and has at its inner base a small spine directed obliquely inward and forward. Infra-orbital border with a deep sinus, along the inner side of which there lies a small, blunt, nonprojecting tooth. Basal article of antenna armed with two anterior spines, the outer one visible from above, the inner one partially concealed by the following article. Antero-lateral margin armed with one hepatic spine, three small and three large branchial spines alternating, the last of which forms the lateral angle of the carapace, and is followed by a small postero-lateral spine. Above the posterior border are five distant spines, two branchial (paired), the outer one the strongest of all, and one intestinal. A transverse row of four gastric spines, a median mesogastric spine; a small cardiac tubercle or spine; three hepatic spines.

Chelipeds of adult male very little longer than carapace, stout; hand swollen, slightly narrowed distally, fingers slender, widely gaping except at tips, a low tooth on dactylus at basal third. Ambulatory legs stout, graduated, the first pair a little longer than chelipeds.

Variations.—A half-grown male from west Africa has the spines relatively shorter or reduced to tubercles, legs slenderer than in full-grown male, but cheliped well developed.

Measurements.—Male (334, Mus. Paulista), total length of carapace 51, total width 49.3, width without spines 43.2, least width between eyes 8.3, length of horn 5.1 mm.

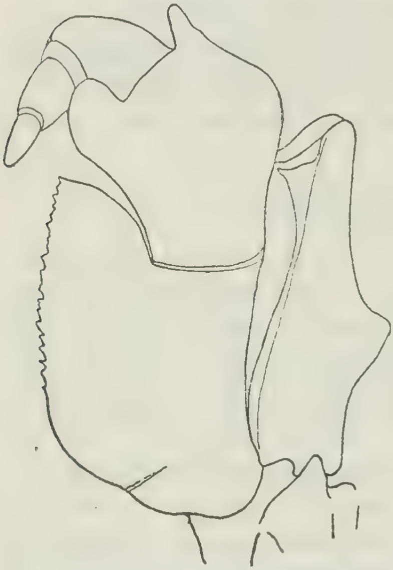

FIG. 100.—MICROPISA VIOLACEA (55769), MAXILLIPED, × 6

Range.—Brazil: Provinces of Rio de Janeiro, São Paulo, and Santa Catharina. Previously known only from West Africa (Sahara to Angola) and the Cape Verde Islands; shallow water to 180 meters (98 fathoms).

Material examined.—

Serra de Masahé, Province of Rio de Janeiro, Brazil; 1912; E. Garbe, collector; from Museu Paulista; 1 male (Cat. No. 55769, U.S.N.M.).

Santos, Province of São Paulo, Brazil; 1896; Bisego, collector; lent by Mus. Paulista (Cat. No. 334).

Desterro, Province of Santa Catharina, Brazil; January, 1866; Fritz Müller; 1 small male (2052, M. C. Z.).

Off Sahara, Africa; lat. 21° 47′ N.; long. 19° 47′ W.; 140 meters; green muddy sand; July 13, 1883; station 92, *Talisman;* 1 male (22969) received from Paris Museum.

Genus CHORINUS Latreille

Charineus (Leach MS.) DESMAREST, Dict. Sci. Nat., vol. 28, 1823, p. 266; Consid. Gén. Crust., 1825, p. 153; *nomen nudum* (neither described nor adopted).

Chorinus (Leach MS.) LATREILLE, Encyc. Méth., Hist. Nat., Entom., vol. 10, 1825, pp. 139 and 699; in Cuvier, Règne Anim., ed. 2, vol. 4, 1829, p. 58 (described, but name not adopted, by Latreille as a division of the subgenus *Pisa;* only species, and therefore type, *Pisa heros* (Herbst).—MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 314.—A. MILNE EDWARDS, Crust. Rég. Mex., 1875, p. 86.

Carapace oblong-oval. Rostrum with two slightly divergent horns. Preorbital spine stout, postorbital spine small, dentiform, remote from orbit. Two superior orbital spines. Basal antennal segment short and narrow; flagellum short, concealed beneath rostrum. Outer maxillipeds with the ischium advanced at the antero-internal angle; merus rhomboidal, advanced at middle, outer angle laterally produced, antero-internal margin oblique, ending posteriorly in a slight tooth. Chelipeds elongate, stouter than ambulatory legs. Legs of first pair long, of remaining pairs very short. Abdomen of both sexes composed of seven separate segments.

Contains only one species, the other species referred to *Chorinus* having been transferred to different genera.

Restricted to the eastern coast of America and to the Bermudas.

CHORINUS HEROS (Herbst)

Plate 107; plate 246, figs. 3–5

Cancer heros HERBST, Natur. Krabben u. Krebse, 1790, vol. 1, pl. 18, fig. 102; 1796, vol. 2, p. 165, pl. 42, fig. 1 (type-locality, "der Ocean"; type in Berlin Mus.).

Maja heros Bosc, Hist. Nat. Crust., vol. 1, 1801–2 (an X), p. 251.

Maja héros LATREILLE, Hist. Nat. Crust., vol. 6, 1803, p. 101.

Cancer (Inachus) heros LATREILLE in Cuvier, Règne Anim., vol. 3, 1817, p. 21.

Pisa heros LATREILLE, Encyc. Méth., Hist. Nat., Entom., vol. 10, 1825, p. 139; in Cuvier, Règne Anim., ed. 2, vol. 4, 1829, p. 58.

Chorinus heros MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 315; in Cuvier, Règne Anim., Disciples' ed., p. 85, pl. 29, figs. 2–2*b*.—A. MILNE EDWARDS, Crust. Rég. Mex., 1875, p. 86.

Chorinus barbirostris (Leach MS.) WHITE, List Crust. Brit. Mus., 1847, p. 6.

Diagnosis.—Carapace oval, with two long horns, connected by a sievelike channel of long hairs. Chelipeds of male very long and stout. Legs of first pair long, of second, third, and fourth pairs short.

Description.—Carapace pubescent, convex, posterior two-thirds smooth, anterior third deflexed, covered with short, blunt tubercles or spines, from which proceed a tuft of coarse hairs: these tubercles are continued part way on the rostrum. Rostral horns stout, usually more or less incurved, about one-third the length of remainder of carapace, and furnished on inner edges with two rows of long, closely placed hairs, which rows separating form with those on the opposite horn a long channel. Preorbital spines about one-third length of rostral horns, curved and directed forward. Marginal spines two, one gastric and one hepatic, the former the longer, flattened, both curved. Above the orbit are two tubercles or stout spines, the anterior the larger and more or less compound. The branchial region has a few tubercles at anterior angle and on antero-lateral margin.

Subhepatic and pterygostomian regions tuberculate. Basal antennal segment with a stout spine at its extremity and a tubercle on lateral margin; almost in the same line there is a tubercle just behind the segment and another at angle of buccal cavity; two movable segments of antennal peduncle flattened, the first one widening at its distal extremity.

Chelipeds naked and smooth, attaining a length of twice that of the carapace in the male; merus cylindrical; manus compressed and slightly dilated, the palmar portion about twice length of fingers; fingers gaping slightly for their distal half or third. Legs stout, pubescent, and hairy, the first pair attaining a length greater than that of carapace; remaining pairs much shorter and decreasing regularly in length.

Measurements.—Male, Bermuda (Amer. Mus. 5527), total length of carapace to tip of horns 63.7 mm., length on median line 46.6, length of horn 16.8, width of carapace 32.3, length of cheliped about 90.4, of first ambulatory 76.8 mm.

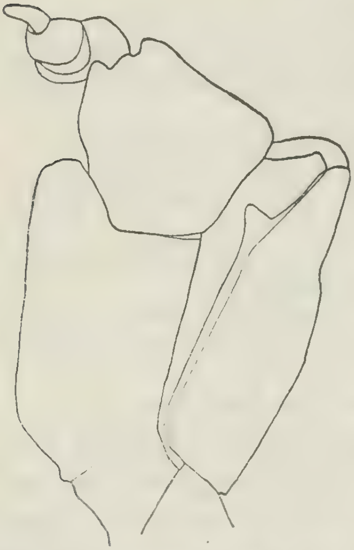

FIG. 101.—CHORINUS HEROS (53044), MAXILLIPED, × 6

Range.—Florida Keys to Bahia, Brazil; to a depth of 16 fathoms. Cuba (von Martens). Also Bermuda.

Material examined.—

Tortugas, Florida; W. H. Longley; 1 male (50441), "abundant."

Key West, Florida; C. J. Maynard; received from Boston Soc. Nat. Hist.; 1 male, 2 females (53044).

Sand Key Light, Florida; rocks, sponges, etc.; 1893; Biol. Exped. State Univ. Iowa; 1 young female (Mus. S. U. I.).

Hawk Channel, Florida, 1¼ miles S. by W. of southeast end of Long Key; 15 feet; barry; February 18, 1903; station 7463, *Fish Hawk;* 1 young (47067).

Florida; J. S. Kingsley collection; received from Boston Soc. Nat. Hist.; 1 male (53043).

Yucatan, off Mujeres Island; 12 fathoms; crs. co. S.; W. Stimpson; 1 young (1941, M. C. Z.).

Lime Cay, Jamaica; P. W. Jarvis, collector; specimen returned to sender.

Jamaica; from Mar. Biol. Lab., Woods Hole; 1 male (47353).

San Domingo; 1878; W. M. Gabb; 1 male (4176).

San Antonio Bridge, San Juan, Porto Rico; January 12, 1899; *Fish Hawk;* 1 young (24163).

Caballo Blanco Reef, Vieques, Porto Rico; February 7, 1899; *Fish Hawk;* 1 male, 1 female (24201).

Off Vieques, Porto Rico; Point Mula Lighthouse, S. SW. ⅜ W., 5¾ miles; 14 fathoms; Co. S. Sh.; temp. 25.6° C.; February 8, 1899; station 6085, *Fish Hawk;* 1 young (24160).

Off Vieques, Porto Rico; Culebrita Lighthouse, NE. ⅜ E., 7¼ miles; 16 fathoms; Co.; temp. 25.2° C.; February 10, 1899; station 6092, *Fish Hawk;* 1 young (24161).

Off Humaçao, Porto Rico; Hucares, NW. ¾ W., 2¼ miles; 9½ fathoms; Co.; temp. 26° C.; February 14, 1899; station 6099, *Fish Hawk;* 1 young (24162).

St. Croix (Copenhagen Mus.).

Barbados; Theodore N. Gill; 1 male (1268, M. C. Z.).

Bahia, Brazil (Copenhagen Mus.).

Rio Vermelho, Bahia, Brazil; February 6; R. Rathbun, Hartt Explorations, 1875–1877; 1 specimen (19945).

Bermuda; L. L. Mowbray; 1 male (Amer. Mus.).

Locality not given: 1 carapace of type, original of Herbst's plate 18, figure 102 (Berlin Mus.).

Genus **HOLOPLITES** Rathbun

Holoplites RATHBUN, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 64; type, *H. armata* (A. Milne Edwards).

Carapace pyriform, covered with sharp spines of unequal length. Rostrum composed of two long, slender, divergent horns. Orbits open, armed with an anterior, a superior, a posterior, and an inferior spine; anterior spine long. Basal antennal segment very narrow, spinous. Antero-internal margin of the merus of the maxillipeds oblique, not notched for the articulation of the palpus; antero-external angle expanded. Abdomen of female with the fourth, fifth, and sixth segments coalesced. Chelipeds and merus of ambulatory legs spinous. Contains only one species.

HOLOPLITES ARMATA (A. Milne Edwards)

Plate 108; plate 245, figs. 6–8

Nibilia armata A. MILNE EDWARDS, Crust. Rég. Mex., 1880, p. 348, pl. 31 A, figs. 3–3 *c* (type-locality, Antilles; cotypes in M. C. Z.); Bull. Mus. Comp. Zoöl., vol. 8, December, 1880, p. 4 (St. Vincent, Grenadines, Barbados; 88 to 180 fathoms.—A. MILNE EDWARDS and BOUVIER, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 386, text-fig. 20.

Holoplites armatus RATHBUN, Proc. U. S. Nat. Mus., vol. 17, 1894, p. 64.

Diagnosis.—Covered with sharp spines. Rostral horns divergent. Antero-internal angle of merus of maxillipeds not notched.

Description.—Preorbital spines much elevated, about half as long as the rostral spines and longer than the other spines of the carapace. Postorbital spine remote from the orbit; below and behind it there is a subhepatic spine. The basal antennal segment bears a long spine at the antero-external angle, and a shorter lateral spine; almost

Material examined of Holoplites armata

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°F						
Cuba	2½ miles NW. of Havana Light.		387	Co	49	Apr. 30, 1884	2152	*Albatross*	1♀	6941	
St. Vincent	13 07 55	61 05 36	124	Co	57.5	Mar. 3, 1879	269	*Blake*	4	2729, 2865, 2868, 3029, M. C. Z.	
Do	13 06 45	61 06 55	88	Co	62	Feb. 21, 1879	232	do	2	2869, 3028, M. C. Z.	
Do	13 06 36	61 12 45	114	Co	57	Feb. 18, 1879	224	do	1♂	3030, M. C. Z.	"Type."
Barbados	13 14 18	59 41 12	180	hrd	50.75	Mar. 9, 1879	295	do	1	2652, M. C. Z.	
Do	13 05 00	59 39 40	140	Co. brk. Sh	56.5	Mar. 10, 1879	299	do	5	2864, 2866, M. C. Z.	
Do	13 02 36	59 37 45	123	R	56.5	do	297	do	1	2867, M. C. Z.	

in the same line there is a suborbital spine. The angle of the buccal cavity is armed with a spine, and the pterygostomian area bears several small spines.

Chelipeds short, stout in the male and feeble in the female; merus somewhat trigonal, its margins and the outer surface of the carpus armed with long spines; upper margin of manus spinous; fingers about the same length as the palm in female, shorter in male. Ambulatory legs hairy; the merus armed with a terminal spine and two other spines on the upper surface; carpus slightly roughened and propodus unarmed; dactylus spinulous on the inner margin.

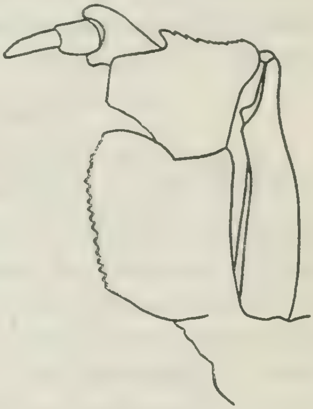

FIG. 102.—HOLOPLITES ARMATA (2866), MAXILLIPED, × 9.37

The first, second, and third segments of the abdomen of the male have three spines. The first three segments of the abdomen of the female are shorter and have each a median spine, diminishing in length from the first to the third; they have also small lateral spinules; coalesced segment very large and smooth; terminal segment broadly rounded at the extremity. The abdomen has scattered hairs like the rest of the surface.

Variations.—The rostrum is of variable length and may, or may not, be divided to its base. Supraorbital spine variable in size and position.

Measurements.—Ovigerous female (6941), length of carapace, including rostrum, 23.5; length of rostral spines 8; width of carapace exclusive of spines, 11; inclusive of spines, 16 mm.

Range.—West Indies: Cuba; St. Vincent; Barbados; Grenadines. Depth, 88 to 387 fathoms.

Material examined.—See table, page 308.

Genus CHORILIBINIA Lockington

Chorilibinia LOCKINGTON, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 69 [7]; type, *C. angustus* Lockington.—MIERS, Journ. Linn. Soc. London, vol. 14, 1879, p. 654; *Challenger* Rept., Zool., vol. 17, 1886, p. 45.—ALCOCK, Journ. Asiat. Soc. Bengal, vol. 64, 1895, p. 221.

Chlorolibinia HASWELL, Cat. Austral. Crust., 1882, p. 17; type, *C. gracilipes* Miers.

Carapace triangular. Rostrum long, broad, and emarginate at tip as in *Libinia*, but the eyes concealed beneath it as in *Chorinus* and its allies. Preorbital and postorbital spines acute, separated above and below by an acute fissure and together constituting the orbit. (Lockington.)

Besides the type species from the Gulf of California, a species from Papua and North Australia and another from the Andamans, have been referred to this genus.

CHORILIBINIA ANGUSTA Lockington.

Chorilibinia angustus LOCKINGTON, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 69 [7] (type-locality, Gulf of California; type not extant).

Chorilibinia angusta MIERS, Ann. Mag. Nat. Hist., ser. 5, vol. 4, 1879, p. 7.

Diagnosis.—Rostral horns comprising only one-third length of of rostrum. A long spine on basal antennal segment. Chelipeds slender, same length as next pair of legs.

Description.—Whole of upper and under surface except inner side of hand and upper surface of rostrum tomentose, with longer hairs at intervals and a row of the latter on each side of rostrum. Carapace triangular, narrowing gradually to region of eyes; orbits salient. Rostrum long, shorter in female than in male, emarginate at tip, the bifurcation divergent, extending only one-third length of rostrum. Basal segment of antennae terminating outwardly in a long spine which precedes the preorbital spine when viewed from above; next two segments setose, slender, cylindrical. Preorbital spine large, acute, separated from the acute postorbital spine by a pointed fissure both above and below. Antero-lateral margin with three spines besides the postorbital, the largest spine at the lateral angle. Tubercles of carapace prominent, each culminating in a single spine; a tubercle with spine on posterior angle.

Chelipeds slender, about same length as next pair of legs; merus with 4 tubercles above; manus smooth, slender; fingers small, slender, in contact most of their length, serrate on inner border. Ambulatory legs slender, rounded, first pair much the largest; dactyli sharp (Lockington).

Measurements.—Male cotype, length of carapace 20, width 12 mm.; female cotype, length of carapace 23, width 15 mm.

Material examined.—None.

Range.—Gulf of California; known only from the description of the three type-specimens.

Remarks.—Perhaps the same as *Libinia mexicana.*

Genus LIBINIA Leach

Libinia Leach, Zool. Misc., vol. 2, 1815, p. 129; type, *L. emarginata* Leach.—Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 235 (part: not *L. macdonaldi* and *spinimana*), and synonymy.

Carapace convex; tuberculous or spinous; triangular-orbiculate and evenly rounded behind the frontal region. Preocular spine usually distinct. Rostrum emarginate or bifid at the apex. Orbits small, nearly circular, with a superior fissure closed or nearly so, and a closed fissure or an open sinus below. Basal antennal segment moderately enlarged. Merus of external maxillipeds truncate at distal end. Chelipeds well developed; palm elongate; fingers with one exception evenly denticulate on inner margins. Ambulatory legs well developed, sometimes elongate, diminishing in length from first to fourth pair; segments subcylindrical, usually unarmed.

America, from Nova Scotia to Terra del Fuego, and from Lower California, Mexico, to Chile; San Francisco, California. Bermuda?; West Africa.

KEY TO THE SPECIES OF THE GENUS LIBINIA

- A¹. Merus of chelipeds unarmed or bearing only one spine or tubercle.
  - B¹. Rostrum either horizontal or deflexed.
    - C¹. Median spines more than 6.
      - D¹. Tubercles of carapace numerous, nongranulate, more or less unevenly placed. Median tubercles or spines 9, 5 behind cervical groove. Tooth or tubercle at angle of basal segment of antenna inconspicuous from above---------------------------**emarginata**, p. 311.
      - D². Tubercles and spines of carapace not numerous, granulate, evenly placed. Median tubercles or spines 7, 4 behind cervical groove. Tooth or spine at angle of basal segment of antenna curved, conspicuous from above------------------------------**spinosa**, p. 325.
    - C². Median spines 6.
      - D¹. No spine at middle of hepatic region.
        - E¹. Fork of rostrum in adult shallow, tips of horns blunt. Lateral marginal spines in young of good size, subequal-------**dubia**, p. 313.

E^2. Fork of rostrum in young deeper than in *dubia*, horns acute, curved toward each other. Lateral marginal spines in young small except the posterior one which is very long and slender. **erinacea**, p. 321.

D^2. A spine at middle of hepatic region.

E^1. Carapace with a lateral marginal arc of 5 spines. Lower fissure of orbit closed.

F^1. A rhomb of 4 spines on branchial region besides the marginal arc. Orbit deep, projecting well beyond outline of carapace. **rhomboidea**, p. 323.

F^2. Five spines on branchial region besides the marginal arc. Orbit shallow, not projecting beyond outline of carapace. **ferreirae**, p. 324.

E^2. Branchial region (in the young) with only 3 spines, all long, 1 marginal, 2 dorsal. An open sinus below orbit---**mexicana**, p. 328.

B^2. Rostrum ascending, hollowed beneath, forming with the antennae an efferent channel. Median tubercles or spines 8; a rhomb of 4 on branchial region; no lateral marginal arc of spines-----------**setosa**, p. 327.

A^2. Merus of chelipeds armed with longitudinal rows of tubercles and spines. Horns widespread and half as long as rostrum-----------**rostrata**, p. 329.

Libinia? verrucosa Lockington from Mazatlan[38] is a *nomen nudum*.

Species reported on both sides of the continent: *emarginata*, *spinosa*, *rostrata*.

LIBINIA EMARGINATA Leach

COMMON SPIDER CRAB

Plates 110–113

Libinia emarginata Leach, Zool. Misc., vol. 2, 1815, p. 130, pl. 108 (type-locality unknown; type in Brit. Mus.).—Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 235, pl. 31, fig. 2, and synonymy.—Hay and Shore, Bull. Bur. Fisheries, vol. 35, 1915–16 (1918), p. 456, pl. 38, fig. 6, and synonymy.

Libinia canaliculata Say, Journ. Acad. Nat. Sci. Philadelphia, vol. 1, 1817, p. 77, pl. 4, fig. 1 (type-locality, bays and inlets of the [east] coast; cotypes from Great Egg Harbor, in Mus. Phila. Acad. Nat. Sci.; specimens, probably cotypes, in Brit. Mus., "presented by T. Say").[39]

Libinia affinis Randall, Journ. Acad. Nat. Sci. Philadelphia, vol. 8, 1839, p. 106 (type-locality, Upper California; two small male types, labeled "NW coast America," are in Mus. Phila. Acad. Nat. Sci.).

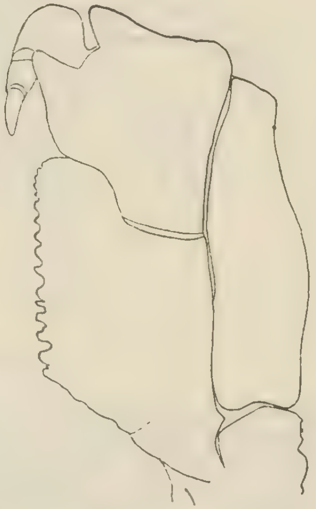

Fig. 103.—Libinia emarginata (3898), maxilliped, × 2.85

Diagnosis.—Carapace with nine median spines or tubercles. Dorsal tubercles many. No spine at angle of buccal cavity.

Description.—Surface of body and limbs densely pubescent. Carapace, without rostrum, nearly hemispherical in the old, narrower anteriorly in the young; regions well marked; covered with short spines and tubercles. Median spines 9, of which 4 are gastric, 1 genital, 2 cardiac, and 2 intestinal. Lateral marginal spines 5 on each

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[38] Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 64.

[39] White, List Crust. Brit. Mus., 1847, p. 4.

side; 2 prominent pterygostomian spines; other large spines are 2 or 4 above the posterior margin besides the median spine and about 4 dorsal branchial spines. Smaller dorsal spines and tubercles numerous, including a transverse line of four gastric tubercles in a row between the first and second median spines. Rostrum deflexed, narrowing distally to the terminal spines, which are short and divergent. Interorbital space medially canaliculate. A short preocular spine; orbital sinuses closed; 2 small spines beneath the orbit on the basal antennal segment.

Chelipeds of adult male stronger than the ambulatory legs and longer than the first pair; a spine in the old, a tubercle in the half grown, near proximal end of upper surface of merus of cheliped; carpus and chelae rough with pearly granules; palms increasing in width distally; fingers about half as long as palm, moderately gaping at base. Ambulatory legs decreasing rapidly in length.

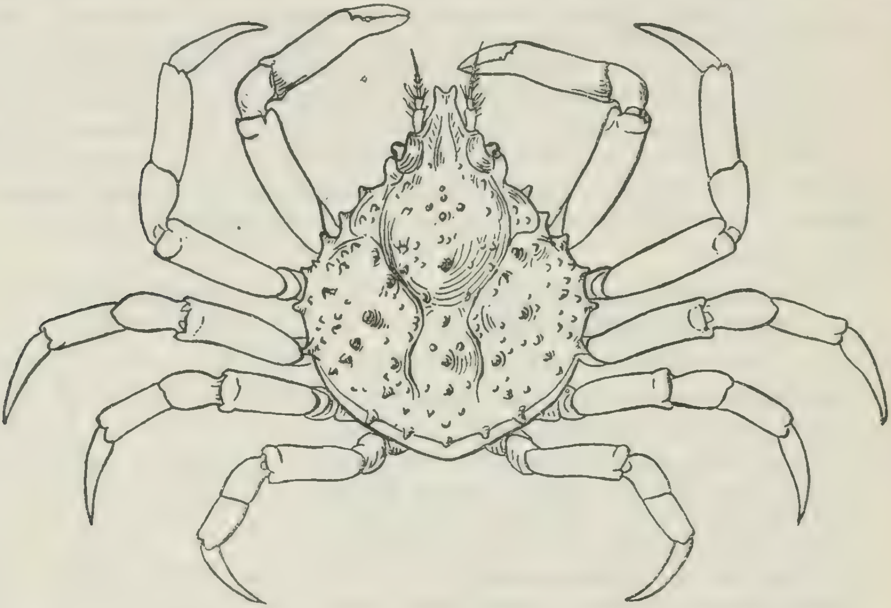

FIG. 104.—LIBINIA EMARGINATA, YOUNG MALE (40178), TOTAL LENGTH OF CARAPACE 43 MM., DORSAL VIEW. (AFTER R. RATHBUN)

Color.—A brownish or dirty yellow.

Variations.—An ovigerous female (15203) from Charlotte Harbor, Florida, approaches somewhat the *dubia* type. It is an *emarginata* in the number of median spines and in possessing a sharp tubercle on the arm; but it resembles *dubia* in the large size of the following spines, viz, the marginal, dorsal branchial, anterior pterygostomian, as well as 3 of the median spines, and in the scarcity of tubercles on the carapace. This specimen I at one time referred to *L. distincta*.[40]

A male and an ovigerous female (20106), between 65 and 75 mm. long from Boca Grande Pass, Florida, are also atypical but in a lesser degree, that is, the spines that are elongate in No. 15203 are less so in No. 20106 and the tubercles are more abundant.

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[40] Proc. U. S. Nat. Mus., vol. 22, 1900, p. 294.

Measurements.—Largest male, Atlantic City (in Mus. Phila.), median length 107.2, width 95.3 mm. Large male (32236), total length of carapace 103.4, width including spines 93.7 mm.

Habitat.—Very abundant on muddy shores and flats; also occurs on every other sort of bottom.

Range.—From Windsor, Nova Scotia, to West Florida; California. Also reported from the Isthmus of Panama and Bermuda,[41] which localities need verification. Depth, shore to 27, exceptionally 68, fathoms.

Material examined.—See table, pages 314-317.

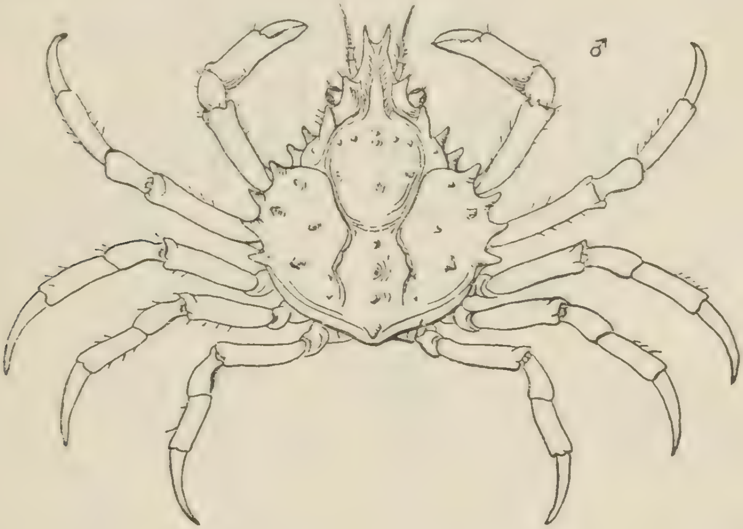

Fig. 105.—Libinia dubia, young male (40177), total length of carapace 38 mm., dorsal view. (After R. Rathbun)

LIBINIA DUBIA Milne Edwards

Plates 114 and 115; plate 122, fig. 1

Libinia dubia Milne Edwards, Hist. Nat. Crust., vol. 1, 1834, p. 300, pl. 14*bis*, fig. 2 (type-locality, *côtes des Etats-Unis;* type in Paris Mus.).—Streets, Proc. Acad. Nat. Sci. Philadelphia, 1870, p. 104.—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 129 (part; not *L. distincta* von Martens nor *rhomboidea*), pl. 18, figs. 5–5 *d*, not pl. 26.—Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 237, pl. 31, fig. 1 (part, not all synonymy).—Hay and Shore, Bull. Bur. Fisheries, vol. 35, 1915–16 (1918), p. 456, pl. 38, fig. 5, and synonymy.

Libinia canaliculata De Kay, Crust. of N. Y., 1844, p. 2 (part). Not *L canaliculata* Say, 1817.

Libinia distincta Guérin, La Sagra's Hist. Cuba, pt. 2, vol. 7, 1856, Crust., p. xii (type-locality, Cuba; type in Lisbon Mus.).—Brito Capello, Jorn. Sci. Lisboa, vol. 3, no. 12, 1871, p. 263, pl. 3, fig. 2 (type).

Libinia subspinosa Streets, Proc. Acad. Nat. Sci. Philadelphia, 1870, p. 105 (type-locality, "Chile," really Cuba; holotype in Mus. Phila. Acad. Nat. Sci.).

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[41] Recorded, but identification doubted by Verrill, Trans. Conn. Acad. Sci., vol. 13, 1908, p. 396.

Material examined of Libinia emarginata

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°*F*						
Nova Scotia: Windsor			1–5					Geol. Survey Canada.	1	Trans. No. 146/177.	Returned to sender.
Massachusetts:											
Wellfleet or Provincetown.						1878		U.S.FishComm.	1♂	2978	
Provincetown						1878		do	2♀	3898	
Do						1879		do	6	5875	
Cape Cod								Wm. Stimpson	1♂ 2♀	2025	
Vineyard Sound						1875		U.S.FishComm.	40♂♀ 14 y	3907 40119	
Do						1881		do	10♂♀	4019	With *Balanus* attached.
Do						Aug. 8, 1883		do	1♀ and exuvia	36973	
Do			6–13	hrd. Sh. G	70	Aug. 31, 1875	710-715	*Bluelight*	9 y	36874	
Do	West Chop Light, E. ½ N., 1¾ miles.		9	S. G	65	Sept. 22, 1881	1041	*Fish Hawk*	4 y	4010	
Do	West Chop Light, E. ½ N., 1½ miles.		6	S. G	65	do	1042	do	10	5858	
Woods Hole								U.S.FishComm.	2 y	40740	
Do						1883		do	5 y	35046	
Do						1911		do	6	43182	
Vicinity of Woods Hole						1911		do	1♂ 25 y	43198 32483	
Southwest of Gay Head, Marthas Vineyard.	41 00 45	71 00 05	27	S	53.5	Sept. 6, 1887	1247	*Fish Hawk*	1♂	12852	
Buzzards Bay	Nye's Neck, S. SE. ¾ E., ⅛ mile.		5.25	S	68	Aug. 26, 1881	956	do	8 very young	4054	
Mattapoisett Harbor						Nov., 1882		Willard Nye, jr.	10 y	5825	
Rhode Island:											
Sakonnet River	McCurry's Point, W. SW., ¾ mile.		11	dk. sft. fetid M	71	Aug. 27, 1880	834	*Fish Hawk*	1 y	38148	
Do	McCurry's Point, N. ¼ E., 1¼ miles.		3.5	sft. M. brk. Sh.	71	do	835	do	1 y	36751	Soft shell.
Do	Black Point, NW. by W. ½ W., ½ mile.		5	S	71	do	837	do	2 y	40743	
Narragansett Bay	North end Dutch Island, S., ½ mile.		10.5	S. M. Sh	69	Aug. 6, 1880	774	do	1 y ♂	49114	Do.
Do	Beaver Tail Light, W. ¾ N., 1¼ miles.		16	S. G. brk. Sh.	60	Aug. 12, 1880	782	do	2 y	40764	

Do	South end Hope Island, N.NE., ¼ mile.	5.5	M. brk. Sh.	70	Aug. 23, 1880	820	do	1 y	34102	
Do	South end Hope Island, N.NE., ¼ mile, to N. by E., ½ mile.	5–5.5	M. brk. Sh.	70	do	820, 821	do	8 y	40765	
Do	Beaver Tail Light, S. SW. ¾ W., 2⅛ miles.	2.5	S.	66	Sept. 1, 1880	852	do	1♂ 5 y	4536	
Do	Beaver Tail Light, SW. by S., 2 miles.	4.5	S.	67	do	853	do	7 y	40744	
Do	Beaver Tail Light, SW. ¼ S., 1¾ miles.	6	S.	67	do	854	do	2 y 13 y	36309 40741	
Do	Beaver Tail Light, W. NW. ¼ W., ½ mile.	14	crs. S. brk. Sh.	66	do	858	do	3♂ 2♀	4535	
Do	Halfway Rock, N. NE. ½ E., 2⅜ miles.	12.5	M.	67	Sept. 17, 1880	882	do	1 s. ♂	5761	
Do					1880		U.S. Fish Comm.	1♂	3583	
Off Newport					1880		do	3 lge	3136	
Newport					Nov. 15, 1875		Samuel Powel	1 y	4167	
Off Newport	Point Judith, NW. by W. ¾ W., 1¼ miles.	12.5	S. G. few large St.	59	Aug. 14, 1880	798	*Fish Hawk*	1 y	40766	
Off Watch Hill		17–21			Aug. 21, 1874		U.S. Fish Comm.	1 y	40742	
Connecticut:										
Noank					1874		do	2♂ 1♂ 1 y	5874 40178 40739	 Figured.
New Haven					May 28, 1880		do	1♀	3843	With young oyster on upper surface of carapace.
Savin Rock, New Haven		Shore.			May 29, 1879		R. Rathbun	8♂ ♀	4102	
Oyster beds of H. C. Rowe, mouth of New Haven Harbor.					May 28, 1880		do	4 y	3042	
Off Stratford	Stratford Point Light, E. NE., 2½ miles.	3.83	hrd	69.8	Sept. 19, 1890	1550	*Fish Hawk*	1 y	17142	
Do	Stratford Point Light, NE. by E. ¾ E., 2⅜ miles.	3.5	hrd	69	Sept. 22, 1890	1552	do	3 y	17143	
Do	Stratford Point Light, N. by E. ½ E., 4¼ miles.	27.66	sft	67	Oct. 1, 1890	1578	do	1 y	17145	
Do	Stratford Point Light, N. NW., 3½ miles.	10	sft	66	Oct. 9, 1890	1615	do	1 y	17144	
Do	Stratford natural oyster bed.				Oct. 4, 1892		Oyster Str. *Henry J.*, owner Theodore Loundes.	1♀	26095	Covered with young oysters. Received through U.S. Fish Comm.
Connecticut	Middle Ground Lighthouse, E. by S. ¼ S., 1¾ miles.	12	sft	68.5	Sept. 25, 1890	1558	*Fish Hawk*	1 y	17141	
Do	Penfield Reef Light, W. by N. ¼ W., 3½ miles.	6	sft	70	Sept. 19, 1890	1547	do	6 y	17140	
Norwalk Islands					July, 1899		J. E. Benedict	2♀	42639	

Material examined of Libinia emarginata—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
New York:	° ′ ″	° ′ ″			°*F*						
Off Montauk						1874		U. S. Fish Comm	1 y.	40763	
Fort Pond Bay						May 25, 1887		*Grampus*	1♂	14582	
Great South Bay								T. H. Bean	1♀	42569	
Fire Island Beach						Sept. 30, 1884		do	1♀	8916	
Fire Island, near Inlet, Anchorage Creek.						Oct. 11, 1898		U. S. Fish Comm	1♀	49119	
The Gut						July 23, 1898		Biological Laboratory, Cold Spring.	9	21657	
New Jersey:											
Atlantic City								Joseph Leidy	1 lge. ♂	Phila. Acad.	
Do								Mrs. E. P. Miller.	1 lge. ♀	23475	
Great Egg Harbor								Thomas Say	2 ♀	Phila. Acad.	Cotypes of *L. canaliculata*.
Delaware: Bethany Beach						July 4-10, 1912		W. D. Appel	1 ♂	44573	
Chesapeake Bay						1880		Earll & McDonald.	1 ♂	5870	
Tangier Sound, Maryland.	Fox Poplar to Jones Lighthouse, 51° 03′.		2⅓	sticky	70	June 4, 1891	1651	*Fish Hawk*	2 y.	16073	
Off Bell on Rappahannock Spit, Virginia	7¾ miles E. by N. ½ N., off Windmill Point Light.		7.5	gn. Marl, S.	65.3	Oct. 23, 1915	8343	do	2 y.	54449	From seaweed.
Off Plantation Light, Virginia.	37 15 21	76 04 40	25	hrd., brk. Sh.		Apr. 22, 1916	8503	do	1♀	54448	
Do	Plantation Light, SE. ⅜ S., Buoy 10, N. ¼ E., Cherrystone Light, E. by N.		*Meters* 45.75		°*C* 21.9	July 8, 1920	8826	do	1 y ♂	55729	
	37 13 12	76 04 30	*Fathoms* 18	hrd., Seaweed, fne. gy. S.	°*F* 49.3	Dec. 3, 1915	8372	do	1 y.	54455	
Off Butler's Bluff, Virginia.			3.75	gn. M. fne. gy. S.	68.7	Oct. 22, 1915	8338	do	1 y.	54446	
Off Thimble Shoal Light, Virginia.	37 00 33	76 15 25	15.25	hrd	47.8	Apr. 21, 1916	8497	do	1 y. ♂	54450	
Hampton Roads, Virginia.			11-12			Apr. 8, 1887	2736 or 2737	*Albatross*	1♂ 3♀	12452	

Virginia, ocean side:											
Southeast of Virginia Beach.	36 47 47	75 55 57	5	hrd		July 17, 1916	8590	*Fish Hawk*	1 y	54451	
North Carolina:											
Off Cape Hatteras	35 21 25	75 24 25	13	crs. gy. S		Oct. 19, 1884	2285	*Albatross*	1 y	7238	
Do	35 10 40	75 06 10	68	gy. M	71.3	do	2268	do	1 y	8743	
Bogue Sound, off Beaufort.						July 6, 1911		W. P. Hay	1	51385	
Middle Sound, near Wilmington.						Apr. 18, 1880		R. E. Earll	1 y	3375	
South Carolina:											
Charleston Harbor						Apr. 1, 1880		do	4♂	3911	
West end Skull Creek								*Fish Hawk*	3 y	16075	
Florida:											
St. Marys River, at Fernandina.						Dec. 5, 1919		*Albatross*	1♂	54447	
Fernandina						Dec. 6, 1919		do	1♂ 1 y	54453	In shrimp trawl.
St. Augustine								J. G. Hewitt	2♀	2018	1 with 3-pronged rostrum.
Florida Straits	24 24 30	81 33 30		br. M		Dec. 4, 1919	20032	*Albatross*	1♂	54456	
Boca Grande Pass								*Fish Hawk*	1♂ 1 ovig. ♀	20106	Variety.
Southern Florida						1880		Silas Stearns	1♂	3147	
Florida Reefs								Lieut. J. F. Moser, U. S. N., U. S. C. S. S. *Bache.*	1♀	14998	
4 miles east of Cape Romano.			3			Apr. 18, 1887		do	1 y	13059	
Marco						1885		H. Hemphill	3 y	15123	
Charlotte Harbor						Mar., 1887		W. H. Dall	1 y	15125	
Do						1889		*Grampus*	1 ovig. ♀	15203	Variety.
Sarasota Bay			1–2			Feb., 1884		H. Hemphill	2 y	15124	
Tampa Bay			3.5–6.5					*Fish Hawk*	1 y. ♀	47102	
West Florida								Henderson and Simpson.	4 y	16312	
Do								J. W. Velie	1 y	23012	
Pensacola								Benjamin Harrison.	1♂	18012	
East coast North America						1892		Wm. Libbey	1♂	22859	
Do								U. S. FishComm	4 y	40745	
Do								Bur. Fisheries	1 lge. ♂	32236	
Do						1891	1659	*Fish Hawk*	1 s	17175	
Extralimital:											
"Northwest coast America."									2♂s	Phila. Acad.	"Types" of *L. affinis.*
San Francisco, California.						Mar., 1854		T. G. Cary, jr.	9 y. (♂♀)	356, M. C. Z.	Labeled by Stimpson, "*Libinia affinis* Randall."
Isthmus of Panama								Dr. Maack	1	M. C. Z.	

Diagnosis.—Carapace with six median spines. Dorsal tubercles few. A spine at angle of buccal cavity.

Description.—Very much like *L. emarginata*, but with a more pyriform carapace and fewer spines. There are but 6 median spines, of which 2 are gastric, 1 genital, 2 cardiac, and 1 intestinal; the preorbital, pterygostomian and lateral spines are stronger than in *emarginata*, but the spiniform tubercles are few or wanting altogether, and the rostrum is slightly longer and more definitely bifid. Anterolateral angle of buccal cavity armed with a spine.

Very small specimens, less than 10 mm. long, of *dubia* and *emarginata*, are difficult or impossible to differentiate.

Measurements.—Total length of carapace of large male (15824) 101.6 mm., width including spines 89.1 mm.

Habitat.—On muddy shores; has nearly the same habits as *L. emarginata.*

Variation.—Extremely variable as to length of dorsal spines and tubercles.

Range.—From Cape Cod, Massachusetts, to Texas; Cuba. West Africa (Streets). Shallow water to 25 fathoms.

Brito Capello,[42] gives for *L. distincta* the locality "Chile," which is an error, as A. Milne Edwards said in 1878,[43] for Cuba. The holotype of *L. subspinosa* Streets, "Chile," is probably one of the same lot of specimens as the type of *L. distincta* Guérin.

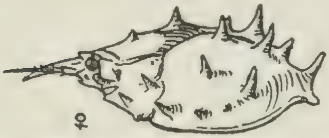

FIG. 106.—LIBINIA DUBIA, YOUNG FEMALE (40176), TOTAL LENGTH OF CARAPACE 35.5 MM., PROFILE. (AFTER SMITH, MS.)

Material examined.—

Vineyard Sound, Massachusetts; U. S. Fish Comm: 1875; 1 female, figured (40176). Sept. 3, 1875; 1 young (40746).

Woods Hole, Massachusetts; .U S. Fish Comm.: 1882; 29 specimens (4905). Caught in fyke-net; October, 1882; V. N. Edwards; 1 large male (5839). Vicinity of; 1911; 1 male (43813).

Mattapoisett Harbor, Massachusetts; November, 1882; W. Nye, jr.; 2 young males (15121).

Newport, Rhode Island; shore; 1880; U. S. Fish Comm.; 2 young (40112).

Narragansett Bay, Rhode Island; Beaver Tail Light, SW. ¼ W., 1¾ mile; 12½ fathoms; S. G.; temp. 68° F.; September 1, 1880; station 851, *Fish Hawk;* 2 young (54444).

Noank, Connecticut: 1874; U. S. Fish Comm.; 1 male, figured (40177); 1 young (40738).

Great South Bay, Patchogue, Long Island, New York; October, 1884; T. H. Bean; 1 female with mollusk attached (8915).

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[42] Jorn. Sci. Lisboa, vol. 3, no. 12, 1871, p. 263.

[43] Crust. Rég. Mex., 1878, p. 129.

The Gut, New York; July 23, 1898; Biological Laboratory, Cold Spring, Long Island; 1 female (21658).

Barnegat, New Jersey; October 13, 1883; Samuel Ridgway; 1 female (5491), almost completely enveloped in a large mass of serpulid worm tubes.

Chincoteague, Virginia; July, 1913; Henderson and Bartsch; 2 males (46284).

Tangier, Virginia; on Oyster Rock; November 19, 1921; C. W. Shores; 1 male (55477).

Hampton Roads, Virginia; 12 fathoms; April 8, 1887; station 2737, *Albatross;* 1 young (15158).

Norfolk, Virginia; Sibley Coll.; 1 male (15824).

For specimens collected in Chesapeake Bay Survey, by U. S. Bureau of Fisheries, see table, page 320.

Beaufort, North Carolina; June 9 and 16, 1904; B. A. Bean and C. A. McKnew; 2 males (30525).

Off Beaufort, North Carolina, on fishing grounds; 12½ fathoms; station 7963, *Fish Hawk;* 7 specimens (51031).

East end of Sullivan's Island, Charleston, South Carolina; on oyster bed; Joe Whiteside and C. C. Leslie, U. S. Fish Comm.; 1 female (3186).

One mile inside May River, South Carolina; *Fish Hawk;* 1 young (26362).

Fernandina, Florida; in shrimp trawl; December 6, 1919; *Albatross;* 1 male (54442).

Indian River Inlet, Florida; January 23, 1896; U. S. Fish Comm.; 1 female (20104).

Indian River at Titusville, Florida; January 14, 1896; U. S. Fish Comm.; 1 female (20105).

Miami, Florida; G. M. Gray; 1 female (42146).

Cape Florida, Florida; Wurdemann; 1 male, with dorsal surface nearly smooth (1865, M. C. Z.).

Bonefish Banks, S. W. end of Biscayne Bay, Florida; November 26, 1906; Pine and Bean; 1 female (33155).

Key West, Florida; 1884; *Albatross;* 10 young (16155).

Boca Grande, Florida; April 27, 1915; E. Danglade; 3 males (54445); variety with low tubercles.

Off Cape Sable, Florida; Lieut. J. F. Moser, U. S. N., U. S. C. S. S. *Bache;* 1 female (13756).

Punta Rassa, Florida; February, 1884; Henry Hemphill; 18 males, 10 females (6436).

Charlotte Harbor, Florida; March, 1887; W. H. Dall; 1 female (12446).

Sarasota Bay, Florida; February, 1884; H. Hemphill; 2 males, 6 females, 1 young (6422).

Material examined of Libinia dubia from Chesapeake Bay survey

Locality	Bearings						Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.			Longitude W.											
Chesapeake Bay:	°	′	″	°	′	″			° *F*						
Off Sandy Point Lighthouse, Maryland.	39	01	40	76	20	36	13	sft. bk. M	65.6	Oct. 27, 1915	8363	*Fish Hawk*	1 y.	54435	
Off Thomas Point Shoal Lighthouse, Maryland.	38	55	09	76	23	12	23	hrd. bk. M	65.5	do	8361	do	4 y.	54436	
Off Chesapeake Beach Wharf, Maryland.	36	41	48	76	29	36	6	sft. bk. M. Marl.	64.2	Oct. 26, 1915	8357	do	1 y.	54428	
Off Sharps Island Light, Maryland.	38	40	15	76	25	06	20	hrd. thin coat M.		May 22, 1916	8537	do	1 y.	54443	
Off Windmill Point Lighthouse, Virginia.	37	38	50	76	05	20	7	hrd. gn. Marl, S.	65.3	Oct. 23, 1915	8343	do	2 y. ♀ 1 ♀	54432 54429	From seaweed. With long spines.
Off Bell Buoy, Rappahannock Spit, Virginia.	37	35	25	76	11	20	7.5	sft. gn. M. S.	66	do	8342	do	4 y.	54431	
Off Cherrystone Light, Virginia.	37	23	30	76	04	50	13	hrd	75.9	July 26, 1916	8603	do	1 y. ♂	54451	
Off Wolf Trap Light, Virginia.	37	22	12	76	10	25	9.5	sft. gn. M. S.	66	Oct. 22, 1915	8341	do	2 y. ♀	54427	
Between New Point Comfort Light and York Spit Light, Virginia.	37	16	50	76	14	27	5.5	hrd., fne. S. M., marine growth.	50.3	Apr. 22, 1916	8506	do	1 y. ♀	54441	
Southeast of Plantation Light, Virginia.	37	15	21	76	04	40	25	hrd., brk. Sh.	51.6	do	8503	do	1 y. ♂	54440	
2 miles W. ¼ S. from Cherrystone Light, Virginia.	37	13	12	76	04	30	18	hrd., Seaweed, fne. gy. S.	49.3	Dec. 3, 1915	8372	do	1 y. ♀	54434	
Back River Light, NW., Thimble Light, W.	37	12	00	76	10	05	4	fne. gy. S.	68	Oct. 22, 1915	8336	do	1 y.	54433	
Off 35-foot Channel Lightship, Virginia.	37	06	35	76	07	30	8.25	gy. M. fne. gy. S.	68	do	8337	do	3 y.	54430	
No. 4 Buoy, N. by W. ⅜ W.; No. 5 Buoy, W. ¼ N.	36	58	38	76	07	14	5.25	hrd., brk. Sh.	46.2	Apr. 21, 1916	8498	do	1 y.	54438	
Off Cape Charles Light, Virginia.	37	03	24	75	58	20	10	hrd. Sh. fne. gn. S.	50.3	Apr. 22, 1916	8502	do	1 y. ♀	54439	

Goodland Point, Florida; H. Hemphill; 1 male (15120).

Cedar Keys, Florida; December, 1883; H. Hemphill; 1 female (6411).

Near Cedar Keys, Florida; February, 1887; Lieut. J. F. Moser, U. S. N., U. S. C. S. S. *Bache;* 3 males, 2 females (12471).

West Florida; Henderson and Simpson; 1 young (16311).

Florida; Dr. Bryant; received from Boston Society of Natural History; 1 male (53054).

Cameron, Louisiana; R. P. Cowles; 1 female (30574).

Corpus Christi, Texas; November 27–30, 1891; B. W. Evermann, U. S. Fish Comm.; 1 female (17100). 2 males, 1 female, from Shamrock Point (17099).

Cuba; wrongly labeled "Chile"; Guérin collection; T. B. Wilson, donor; 1 small male, holotype of *L. subspinosa* Streets (Phila. Acad.). Median length of carapace 37, total length 38.5, width with spines 34, without spines 29 mm.

West Africa; Gaboon country; Du Chaillu, collector; 1 young female (Phila. Acad.); length of carapace on median line to posterior margin 18.4 mm., length from tip of rostral horn to posterior margin 19.8 mm., width without spines 13.2 mm., with spines 15.7 mm.

LIBINIA ERINACEA (A. Milne Edwards)

Plate 109

Pisa erinacea A. Milne Edwards, Crust. Rég. Mex., 1879, p. 202, pl. 15 A, figs. 4–4*b* (type-locality, lat. 24° 44′ N., long. 83° 26′ W., between Florida and Cuba, 37 fathoms; type in Paris Mus.).

Diagnosis.—Carapace with 6 median spines. Three dorsal spines and tubercles on branchial region; no dorsal spine on hepatic region. Spines uneven; 8 are long, forming a cross.

Description of young specimen.—Carapace pyriform, much longer than wide, excluding spines. Six median spines, 2 gastric, 1 genital, 2 cardiac, 1 intestinal; the anterior gastric and the genital spine are very small, the others long. Marginal spines 5 (paired), the posterior one very long, the others small. Dorsal branchial protuberances 3, forming a triangle, the posterior one very long and forming a conspicuous line of 5 with the anterior cardiac spine and the postero-lateral spine; the innermost of the branchial triangle is a low spine, the outermost a small tubercle. Rostrum very long, bifid for half its length, horns slender, moderately divergent, tips sharp-pointed and subparallel. Two pterygostomian spines, in a longitudinal line, the anterior one the larger. A tooth at the antero-lateral angle of the basal segment of the antenna and one on its outer margin.

Chelipeds of the immature specimens examined weak and shorter than the ambulatory legs.

Measurements.—Immature female (46292), total length of carapace 31.1 mm., median length 26.8 mm., width including spines 25.2, excluding spines 18 mm. Mr. N. S. Burnham saw one three times as large. Young female, length 37, width 27 mm. (Brito Capello).

Habitat.—Found crawling on logs just under the surface of the water, and always seen in little patches of moss. (Burnham).

Remarks.—This species is undoubtedly a *Libinia*, but the form of the adult is not known. It is nearest *L. dubia*, having the same number of protuberances. It is narrower than *dubia* of the same length, and its narrow carapace and long horns led A. Milne Edwards to place it in the genus *Pisa*. It also differs from *dubia* in having only 8 spines of good size behind the front and those very long, while the remaining spines are very small or obsolescent; the 8 long spines form a cross, 4 being median and 4 in a line between the posterolateral angles. The 4 spines in a transverse row in front of this line are inconspicuous. In *dubia*, while the 6 median spines are unequal they are not strikingly so, the 3 dorsal branchial spines are subequal, the last or posterior of the marginal spines may be the longest of the arc but the others are also of good size. Orbit more open than in *dubia*, the outer margin of the supraocular eave more concave, its posterior angle prominent and conspicuous. The adult of *erinacea* may prove to be only a variety of *L. dubia*.

Range.—Florida Keys to western Cuba; 2 to 37 fathoms.

Material examined.—

Biscayne Bay, Florida; 1 mile N. of Feather Bed Bank; 2 fathoms; S. G.; March 7, 1903; station 7481, *Fish Hawk;* 1 young female (47100).

Jewfish Creek, Florida; (a salt-water connection between Barnes Sound and Blackwater Sound); N. S. Burnham; 1 young female (46292).

North of Knights Key Channel, Florida; 3 miles NE. by N. of East Bahia Honda Key; 11 feet; rky.; Jan. 22, 1903; station 7412, *Fish Hawk;* 1 young female (47099).

Pigeon Key Lake, Florida; 1 mile E. of East Bahia Honda Key; 10½ feet; rky.; Jan. 7, 1903; station 7404, *Fish Hawk;* 1 young female (47101).

Cuba; on reef flat between Cayo Hutia and Little Cayo, NE. of light; Henderson and Bartsch, *Tomas Barrera* Exped.; 1 young male (48745).

LIBINIA RHOMBOIDEA Streets

Plates 116 and 117; plate 245, figs. 1–3

Cangrejo Peludo Parra, Descripcion de diferentes piezas de Historia Natural, Havana, 1787, p. 134, pl. 50, fig. 1.

Libinia rhomboidea Streets, Proc. Acad. Nat. Sci. Philadelphia, 1870, p. 106 (type-locality, East Indies; holotype in Mus. Phila. Acad. Nat. Sci.).—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 131.

Libinia inflata Streets, Proc. Acad. Nat. Sci. Philadelphia, 1870, p. 106 (type-locality, West Indies; type thought to be in Mus. Phila. Acad. Nat. Sci., where it is labeled "Cuba").

Libinia distincta von Martens, Arch. f. Naturg., vol. 38, part 1, 1872, p. 79, pl. 4, figs. 1 *a* and 1 *b*.—Gundlach and Torralbas, Anales Acad. Cien. Habana, vol. 36, 1899 (1900), p. 303, text-figs. on p. 304; reprint, 1917, p. 13, pl. [3], fig. 6. Not *L. distincta* Guérin, 1856.

Libinia dubia A. Milne Edwards (part), Crust. Rég. Mex., 1878, p. 129 (Cuban specimen only), pl. 26.

Diagnosis.—Carapace with 6 median spines. Four dorsal spines on branchial region; one dorsal spine on hepatic region.

Description.—Carapace the shape of *L. dubia*, pyriform-orbicular. Rostrum more deeply emarginate, horns more acutely pointed. Six median spines, 2 gastric, 1 genital, 2 cardiac, and 1 intestinal. The anterior gastric spine is one of a transverse row of 5 of which the 2 spines of the intermediate pair are smaller and a little more advanced than the others. Five strong lateral marginal spines which with a similar spine at the middle of the hepatic region make almost a semicircle. Four dorsal branchial spines form an elongate rhomb. Two strong pterygostomian spines and, almost in the same line but directed forward, a spine on the edge of the epimeron and in front of the cheliped. The spines of the branchial and hepatic regions are longer than those of the median region. A short spine at antero-external angle of buccal cavity, and adjacent to it, a longer one on the suborbital region. Basal antennal segment armed with 3 short spines, 1 at the antero-external angle, 1 on the inner margin, bordering the antennular fossa, and the third on the outer margin, forming part of the orbital border.

Chelipeds of old male shorter than in *emarginata* or *dubia*; merus armed with a spine above near the proximal end; palm and wrist roughly granulate; dactylus two-thirds as long as upper margin of palm.

Ambulatory legs longer and more slender than in *emarginata* or *dubia*, the first leg longer than the cheliped. Dactyli very long and slender, and almost bare, the hairy coating extending only a short distance from the propodus.

Variations.—In two specimens the genital spine is almost suppressed, and the posterior of the cardiac spines is represented by a low elevation with a deep depression at the center, as described by

Streets. In the Port of Silan female, the median spines and the two innermost branchial spines are reduced to tubercles.

Relationships.—Nearly allied to *dubia* but has 2 more dorsal spines (paired), one hepatic, the other forming the anterior end of the branchial rhomb. The posterior end of the supraocular eave forms a spine pointing sideways where it overlaps the postocular cup.

Measurements.—Large male (48671), total length of carapace 90.3 mm., width including spines 83 mm., width excluding spines 73.1 mm. Type female (Mus. Phila.), total length of carapace 80.7, median length 78, width without spines 65 mm.

Range.—Western Cuba; Yucatan.

Material examined.—

Havana, Cuba; 1871; Ramon M. Forns; 1 male, 1 female (2076, 2077, M. C. Z.).

Santa Lucia, Cuba; May, 1914; Henderson and Bartsch, *Tomas Barrera* Exped.; 1 female (47919).

Cape Cajon, Cuba; from traps; 1914; Henderson and Bartsch, *Tomas Barrera* Exped.; 1 female (48671).

Cuba; N. H. Bishop; received from Boston Soc. Nat. Hist.; 1 male (53050).

Cuba; Guérin's collection; T. B. Wilson; 1 male and cast shell (Phila. Acad.); labeled "*inflata* Sts" and is perhaps type of *inflata*.

Cuba; Gundlach; 3 specimens labeled "*L. distincta* Guérin" (Berlin Mus.).

Off Merida, Yucatan, Mexico; A. Schott; 1 male (2169). Port of Silan, Yucatan; 1 adult female (Cat. No. 772, Mus. Phila. Acad. Nat. Sci.)

"East Indies"; locality probably an error; T. B. Wilson; 1 female, holotype (Phila. Acad.).

LIBINIA FERREIRAE Brito Capello

Plates 118 and 119; plate 245, figs. 4 and 5

Libinia ferreirae BRITO CAPELLO, Jorn. Sci. Lisboa, vol. 3, No. 12, 1871, p. 262, pl. 3, figs. 1, 1*a* (type-locality, Brazil "provavelmente;" type in Lisbon Mus.).

Libinia gibbosa A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 131 (type-locality, Desterro, Brazil; type in Paris Mus.).

Diagnosis.—Median spines 6; branchial spines 7 or 8, in 3 rows; 1 supero-hepatic spine.

Description.—Carapace orbicular, except for the frontal region, and very convex. Length of preorbital portion between one-fifth and one-sixth of the remaining length. Rostral horns short and very divergent. Five large lateral spines, conical, acute. Dorsal surface well spined and tuberculate. On the gastric region, 5 sharp tubercles in a row and one median, farther back; the intermediate pair of the row are smaller and may be further forward than the other 3. Four median spines on the posterior half, of which one is genital, 2 cardiac, and 1 intestinal; 8 spines in 3 subparallel rows on the branchial region, of which 2 small are in an almost longitudinal row near the cardiac region, 4 form an irregular oblique line at the summit (the hinder 1 may be absent or obsolescent), while 2 are further forward. One small spine at middle of hepatic region. Pterygostomian region armed with 2 large spines, the anterior much the longer; one stout spine or tubercle at angle of buccal cavity and one further forward close to the basal antennal segment; this segment has 2 tubercles or lobes on its outer margin.

Measurements.—Male (?), type, length 68 mm., width 58 mm. (Brito Capello). Female, mature (47833), total length of carapace 50.4, width including spines 50, excluding spines 44.2 mm.

Range.—Brazil: States of Rio de Janeiro and São Paulo.

Material examined.—Terra de Masahe, State of Rio de Janeiro; January, 1912; E. Garbe; received from Mus. Paulista through H. von Ihering; 1 female (47833).

Santos, State of São Paulo; 1902; Mus. Paulista; 1 young male, returned to sender.

Iguapé, State of São Paulo; 1902; R. Krone; received from Mus. Paulista, through H. von Ihering; 1 young male (47855).

LIBINIA SPINOSA Milne Edwards

Plates 120 and 121

Libinia spinosa MILNE EDWARDS, in Guérin, Icon. Règne Anim., Crust., pl. 9, figs. 3–3*b*; Hist. Nat. Crust., vol. 1, 1834, p. 301 (type-locality, "les côtes du Brésil;" type in Paris Mus.).—LAGERBERG, Schwed. Südpolar Exped., 1901–1903, vol. 5, Lief. 7, Anom. u. Brach., 1905, p. 21.

Libinia espinosa [error for *spinosa*] GUÉRIN, La Sagra's Hist. Cuba. part 2, vol. 7, 1856, Crust., p. xii.

Libidoclaea brasiliensis HELLER, Crust. Reise *Novara*, 1865, p. 1, pl. 1, figs. 1 and 1*a* (type-locality, Rio de Janeiro; type in Vienna Mus.).

Diagnosis.—Median tubercles 7, gastric tubercles 7, lateral marginal spines 4. A straight row of 4 spines between the posterior cardiac spine or tubercle and the postero-lateral marginal spine.

Description.—Carapace in the large male orbicular, save for the rostrum and broader than long without rostrum. Marginal spines short, dorsal protuberances rather high tubercles; all are densely granulated and bare at the summit. Median tubercles 7, 3 gastric, 1 genital, 2 cardiac, and 1 intestinal, the last the most conical and spiniform. Marginal spines 4, the first of which is situated well on the hepatic region. Protogastric spines 2 (paired), situated one obliquely behind the other and nearer the median line, the interval between them being opposite the anterior median tubercle. Dorsal branchial spines 4; two of these form a straight, oblique line with the postero-lateral marginal spine and the posterior of the cardiac spines; the other two form a transversely oblique line near the inner angle of the region. A small tubercle near inner angle of hepatic region.

Rostrum broad behind, diminishing to base of the short, blunt horns and then widening slightly. Preocular tooth strong. A sinus in lower margin of orbit. Two large pterygostomian spines, followed by a tubercle on the upturned edge of the carapace, in front of the cheliped; a strong, conical tooth or spine at the angle of the buccal cavity and a small tooth in front of it; 2 large teeth on the basal antennal segment, 1 at the antero-external angle and 1 on outer margin.

Chelipeds of large male not quite so long as first ambulatory leg; a stout, subacute spine near base of merus; palm increasing considerably in width toward the fingers, which gape widely at base; dactylus more than half as long as upper width of palm. Ambulatory legs decreasing rapidly in length.

Measurements.—Male (Ilha Victoria), total length of carapace 69.7 mm., width including spines 65 mm.

Color.—Deep yellowish (Heller).

Range.—From Rio de Janeiro to Terra del Fuego (Lagerberg). Chile (Milne Edwards and Lucas; Nicolet, in Gay).

Material examined.—

Rio de Janeiro, Brazil: Collected by Mus. Nac. Rio; received from Mus. Paulista (H. von Ihering, 337); 1 ovigerous female (47826). 1872; *Hassler* Exped.; 1 young (1866, M. C. Z.).

Ilha Victoria, São Paulo, Brazil; 1906; Fr. Günther, collector; lent by Mus. Paulista (335); 1 male.

Cabo Santa Maria, Rocha, Uruguay; F. Felippone; 2 males, 3 females (54625, 54633, 55770).

Maldonado, Uruguay; T. G. Cary; 5 males, 5 females (1868, M. C. Z.).

Isla de Flores, Uruguay; F. Felippone; 1 male (55771).

Arroyo Pantanoso, Bay of Montevideo, Uruguay; F. Felippone; 1 male (44689), 1 ovigerous female (44690).

Rio de la Plata, below Monte Video, Uruguay; 7 fathoms; *Hassler* Exped.; 4 young (1867, M. C. Z.); identified by A. Milne Edwards.

Argentina; off Rio de la Plata; lat. 36° 47′ 00″ S.; long. 56° 23′ 00″ W.; 10½ fathoms; S. brk. Sh.; Jan. 12, 1888; station 2766, *Albatross;* 1 young male, 1 young female (21918).

Port San Antonio, Patagonia; Feb., 1872; *Hassler* Exped.; 4 males (1869, M. C. Z.).

San Matias Bay, Patagonia; *Hassler* Exped.; 1 immature female (2050, M. C. Z.).

LIBINIA SETOSA Lockington

Plate 243

Libinia canaliculata? Lockington, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 67 [5].

Libinia affinis? Lockington, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 67 [5].

Libinia setosa Lockington, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 68 [6] (type-locality, San Bartolomé Bay, Lower California; type not extant).—Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 238, pl. 28; vol. 21, 1898, p. 574.

Libinia semizonale Streets, Bull. U. S. Nat. Mus., No. 7, 1877, p. 103 (type-locality, Lower California; holotype, Cat. No. 2300, U.S.N.M.).

Diagnosis.—Rostrum ascending, channeled below. Median spines of carapace 8; 2 superhepatic spines; a rhomb of 4 on branchial region.

Description.—Carapace broadly pyriform, its width less than the postfrontal length. Rostrum ascending, not widened at the extremity, emarginate, forming two shallow teeth which are shorter in old than in young; rostrum arched from side to side, bordered with a fringe of hair, and forming with the rather rigid antennae which are similarly fringed, an expiratory channel.

Median spines 8, of which 4 are gastric, 1 genital, 2 cardiac and 1 intestinal; a single spine on each side of the anterior gastric spine; 2 marginal spines, 1 branchial, the other subhepatic; 4 dorsal branchial spines, of which 2 form a slightly curved line with the marginal spine and the posterior cardiac spine, and the other 2 are in line with the genital spine. A prominent preocular spine. Two hepatic spines, one above the other; a subbranchial spine, below the epimeral suture. A small spine or two on either side above the postlateral margin. Two stout pterygostomian spines, the posterior one very blunt; a spine at antero-external angle of basal antennal segment; a spine just behind the outer margin of that segment.

Chelipeds of old male much longer than ambulatory legs, stout, finely granulate; palm not widening much toward fingers; dactylus ⅔ as long as upper margin of palm; fingers gaping in basal half. Legs stout and rather short.

Variations.—In the old the spines are small, or reduced to sharp tubercles or, as in the case of the postlateral tubercles, obsolete. In the young, 18 mm. or less in length, 11 spines are very long and the rest small; the long spines are 3 median (penultimate gastric, anterior cardiac and intestinal), and 4 branchial (paired) forming 2 transverse lines on the carapace; posterior gastric spine wanting.

Measurements.—Largest male (19523), total length of carapace 95 mm., total width 75.6 mm.

Range.—Lower California, Mexico, where so far as known it has been taken only on the west coast.

Material examined.—

MEXICO: LOWER CALIFORNIA

Dr. Thomas H. Streets, U. S. N.; 1 male (2300), holotype of *Libinia semizonale* Streets.

Playa Maria Bay; August 24, 1896: A. W. Anthony; 5 large males (19523).

Santa Maria Bay; March 18, 1911; in boat dredge; *Albatross;* 8 young (47113).

Abreojos Point; July 31, 1922; G. D. Hanna. California Academy Expedition: 7 males, 3 females (Cal. Acad.); 1 male, 1 female (56853).

Off Abreojos Point; lat. 26°.42′ 30″ N.; long. 113° 34′ 15″ W.; 5½ fathoms; gn. M.; May 4, 1888; station 2835, *Albatross;* 1 young female (21917).

Magdalena Bay; May 2, 1888; *Albatross:* Lat. 24° 38′ 00″ N.; long. 112° 17′ 30″ W.; 51 fathoms; gn. M.; temp. 56.4° F.; station 2832; 2 young (21915). Lat. 24° 38′ 00″ N.; long. 112° 17′ 30″ W.; 51 fathoms; gn. M.; station 2833; 2 young (21916). Lat. 24° 32′ 00″ N.; long. 111° 59′ 00″ W.; 12 fathoms; fne. gy. S.; station 2831; 19 young (21914).

Magdalena Bay: 1917; C. R. Orcutt; 1 male (50628). *Hassler* Exped.; 1 young female (1871, M. C. Z.).

LIBINIA MEXICANA Rathbun

Plate 244, fig. 1

Libinia mexicana Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 242, pl. 31, fig. 3 (type-locality, Gulf of California, station 3029, Albatross; holotype, Cat. No. 16072, U.S.N.M.).

Diagnosis.—Carapace of young with 12 long spines behind the orbits. Median spines 6. A long hepatic spine.

Description of young male.—Pubescence short, stout, vesicular. Carapace pyriform, much narrower (exclusive of spines) than the postfrontal length. Median spines 6: 2 gastric, long, 1 genital, short, 2 cardiac, the anterior short, posterior long, and 1 intestinal, long. Two long marginal spines, 1 hepatic, 1 branchial and a small spinule or tubercle on the postlateral margin. A short gastric spine either side of the anterior median spine; 2 long dorsal branchial spines arranged in an obliquely longitudinal line. Preocular eave armed with a rather long, suberect spine. Rostrum horizontal, slightly constricted at middle, horns occupying nearly half its length, tapering, acute. Two pterygostomian protuberances, the anterior a conical, acute spine, the posterior a tubercle. A sharp conical spine occupies the anterior margin of the basal antennal segment. An open sinus in lower margin of orbit.

Measurements.—Young male, holotype, total length of carapace from posterior margin 13.3, width without spines 7.5, with spines 11.2 mm.

Range.—Known only from the type-locality and unique specimen from the Gulf of California, off Shoal Point, Mexico, near the mouth of the Colorado River, lat. 31° 33′ 00″ N.; long. 114° 20′ 30″ W., 10½ fathoms, fne. gy. S. brk. Sh., Mar. 26, 1889, station 3029, *Albatross*, 1 young male (16072).

Remarks.—Differs from all other species in the long, horizontal, hepatic spine.

LIBINIA ROSTRATA Bell

Plate 122, fig. 2; plate 242

Libinia rostrata Bell, Proc. Zool. Soc. London, vol. 3, 1835 (1836), p. 169 (type-locality, "ad oras Peruviae"; type not extant); Trans. Zool. Soc. London, vol. 2, 1836, p. 42, pl. 8, fig. 3.

Diagnosis.—Rostrum with long, wide-spread horns. Arms with longitudinal rows of tubercles and spines. Three enlarged tubercles in gape at base of fingers.

Description (after Bell).—Carapace almost globose, regions much elevated, with numerous strong spines and tubercles, one longer than the rest standing out horizontally on each branchial region. Anterolateral margin with 3 spines, while a fourth behind them forms the commencement of a flattened ridge extending backwards to the posterior margin. [These are undoubtedly submarginal, chiefly pterygostomian spines.] Orbits with a strong preocular spine. Rostrum very prominent, flattened, terminating in 2 strong divergent spines.

Chelipeds of male twice as long as body; arms furnished with numerous obtuse spines [disposed in 3 rows, according to figure]; wrists tuberculate; hands granulate; fingers touching each other only at the rather acute points.

According to Bell's figure, the arrangement of the dorsal protuberances is as follows: A transverse row of 5 tubercles on the anterior gastric region, with another median tubercle closely in advance; on the mesogastric region a small diamond of 4 tubercles placed lengthwise. Three other median tubercles, namely, genital, anterior cardiac, and intestinal. On the posterior half of the branchial region two longitudinal rows, the inner row of 2 tubercles, the outer row of 3 spines; on the anterior branchial region a triangle of 3 tubercles. The rostral horns are so widespread that the width between their tips is more than one and one-half times the width at base of rostrum. On the basal half of the fingers in the gape there are 2 tubercles on the dactylus and between them one on the fixed finger; distal half of prehensile edges crenulate. The first ambulatory leg is not much longer than the carapace.

Notes on a specimen from Brazil in the museum at Philadelphia.—It appears to be the same species. Although a little larger than the type, the chelipeds are not fully developed, the arm spines less strong, the enlarged tubercles on the fingers almost lacking. Only 5 median spines: 2 gastric, 1 genital, 1 cardiac, and 1 intestinal. Behind the cardiac spine there is a crater-like tubercle. On the gastric region are various spinules, mostly irregularly placed; between the anterior gastric spine and the right spine of the row of 3 (not 5) there is a small spine or spinule situated nearer the median spine; immediately behind the median spine and a little to the left there is a spinule; behind the posterior gastric spine there is a cluster of 6 spinules, of which all are irregularly placed save 2; those 2 make an equilateral triangle with the median spine. A dorsal hepatic spine. Only 1 really marginal branchial spine, that at postero-lateral angle; between it and the lateral gastric spine there is a wavy line of 3 spines; on the inner portion of branchial region there is a right-angled triangle formed of 3 spines. Rostrum inclined downward; horns more spreading than in Bell's figure; distance between tips 10.4 mm., or twice the width at base of rostrum. Preorbital spines slenderer and more outstanding than in Bell's figure. Three strong pterygostomian spines, as in the type, and at the beginning of the true marginal rim that runs around the postero-lateral and posterior margin. Three short spines on the basal antennal article, one at antero-internal angle, very blunt and lobiform, one acute at antero-external angle, and one a little stouter, on lateral margin. Five spines on upper side of arm, the one at the distal articulation smallest; a row of six small tubercles on outer surface; a few tubercles on proximal end of wrist.

An adult female from the Canal Zone measures 66.3 mm. long, 58.7 mm. wide, including spines, 47.8 mm. wide, excluding spines. It agrees with the Brazilian specimen in most characters; it has, however, a tubercle behind the second gastric spine. Horns spreading nearly as in Bell's figure. Chelipeds weak, upper half of surface of merus and carpus rough with many tubercles.

Measurements.—Male type (Bell), total length of carapace 2 inches 8 lines (71.1 mm.), width 2 inches 3 lines (58.42 mm.). Male (Brazil), median length 70.4, total length 77.5, width without spines 59.4, with spines 66 mm.

Color.—Of hair light brown; body itself paler (Bell).

Range.—Peru, 5 fathoms, soft mud; Panama (Atlantic side); Brazil.

Material examined.—

Toro Point, Canal Zone, Panama; January 25, 1912; Meek and Hildebrand, Smithson. Biol. Surv.; 1 adult female (56536).

Brazil; T. B. Wilson; 1 adult male (Phila. Acad.).

Genus LISSA Leach

Lissa Leach, Zool. Misc., vol. 2, 1815, p. 69; type, *L. chiragra* (Fabricius).
Lissula Rafinesque, Amer. Monthly Mag., vol. 3, Aug. 1818, p. 272; substituted for *Lissa* Leach.

Carapace triangular, very convex; surface very uneven; mesogastric region especially elevated; from it a more or less interrupted ridge extends to the postero-lateral angle; sides of gastric and branchial regions steep. Preocular tooth or spine present. Rostrum suboblong, flattened, inclined downward, sometimes deeply divided by a closed median fissure, extremity truncate, its outer ends forming a small lateral lobe or tooth. Orbit with a superior and an inferior closed fissure; eyes when retracted fitting into an inconspicuous cup-shaped postorbital lobe. Basal article of antennae much enlarged, its distal margin united with supraocular eave. Inner half or three-fifths of ischium of outer maxillipeds strongly advanced; merus subtriangular, dilated outwardly; a very shallow sinus at articulation of palpus. Chelipeds stout, palm compressed, enlarged, sometimes carinate; fingers gaping at base in the male. Ambulatory legs of moderate length, decreasing rapidly in size from the first to the last, either cristate or nodose; dactyli unarmed.

Inhabits both coasts of middle America, from Lower California to the Galapagos Islands, and from the Bahamas to the West Indies; also the Mediterranean.

KEY TO THE AMERICAN SPECIES OF THE GENUS LISSA

A^1. Branchial ridges not deeply divided, but rather sharp and tuberculate or granulate.
  B^1. Postero-lateral margin simply concave. Outer margins of hepatic regions diverging posteriorly------------------------------**aurivilliusi**, p. 333.
  B^2. Postero-lateral margin sinuous. Outer margins of hepatic regions parallel--**bicarinata**, p. 332.
A^2. Branchial ridges divided into two rounded lobes.
  B^1. Carapace granulate on the protuberances, nearly smooth elsewhere. At anterior angles of front a tooth less advanced than the submedian lobes--**tuberosa**, p. 333.
  B^2. Carapace everywhere granulate. At anterior angles of front, a small curved spine, more advanced than the submedian lobes. **brasiliensis**, p. 335.

ANALOGOUS SPECIES OF LISSA ON OPPOSITE SIDES OF THE CONTINENT

Atlantic	Pacific
bicarinata.	*aurivilliusi.*
brasiliensis.	*tuberosa.*

LISSA BICARINATA Aurivillius

Plate 73, figs. 3 and 4

Lissa bicarinata Aurivillius, Kongl. Sv. Vet. Akad. Hand., vol. 23, No. 4, 1889, p. 54 (type-locality, St. Barthelemy; type in Stockholm Mus.).—Rathbun, Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 255; Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 64.

Diagnosis.—Branchial ridge narrow; postero-lateral margin sinuous; outer margins of hepatic regions parallel.

Description.—Carapace with two rounded median prominences, one gastric and one cardiac, the former much larger and higher. From the gastric prominence two ridges run divergently backward to the postero-lateral angles of carapace. Both the median prominences and ridges are indistinctly tuberculate. Posterior outline arcuate and separated from the blunt postero-lateral angles by a broad rounded sinus. Sides of branchial and gastric regions steep. Outer margin of branchial region with a broad and shallow tooth at its middle. Outer margins of hepatic regions almost parallel. Rostrum wide, deflexed, subtruncate, widening at extremity, which is four-lobed; median lobes rounded and separated by a narrow U-shaped fissure; outer lobes smaller, blunt, slightly less advanced than median. Upper surface of rostrum slightly concave in a longitudinal direction. There is a short, acuminate preorbital spine directed obliquely upward. Legs furnished with triangular laminate crests.

Measurements.—Ovigerous female (24120), length of carapace 9.5, width 9.2 mm. Type female (Aurivillius, in letter), length of carapace 7, width 8, length of rostrum 2 mm.

Range.—Bahama Banks to St. Bartholomew, Leeward Islands; to a depth of 12½ fathoms.

Material examined.—

Bahama Banks; Biol. Exped. State Univ. Iowa, 1893; 1 female (Mus. S. U. I.).

Porto Rico: Mayaguez Harbor; customhouse, NE. ¾ E., 4½ miles; 4 to 6 fathoms; Co.; temp. 68° F.; January 20, 1899; station 6065, *Fish Hawk;* 1 ovigerous female (24120).

Off Vieques Island; Point Mula Lighthouse, E. by N., 10¾ miles; 12½ fathoms; Co.; temp. 27° C.; February 14, 1899; station 6095, *Fish Hawk;* 1 female (24121).

LISSA AURIVILLIUSI Rathbun

Plate 246, fig. 2

Lissa aurivilliusi Rathbun, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 575, pl. 41, fig. 4 (type-locality, off Cape St. Lucas, 31 fathoms; holotype, Cat. No. 21575, U.S.N.M.); Proc. Washington Acad. Sci., vol. 4, 1902, p. 284.

Diagnosis.—Branchial ridge narrow; postero-lateral margin concave; one crest on carpus of first three pairs of ambulatory legs.

Description.—Gastric prominence small, angular; oblique ridges leading from it sharp, finely tuberculate, with only a shallow tooth at middle in place of the round knob in *L. tuberosa* and terminating in a raised tooth at postero-lateral angle. Cardiac hump small, median ridge extending back from it narrow. Lateral margins tuberculate, a shallow tooth at middle and one farther back. Postero-lateral margin with a shallow sinus extending its whole length. Median notch of front shallow, outer teeth prominent.

Chelipeds much as in *L. tuberosa*. Ambulatory legs with only one crest on the carpus of the first three pairs, the anterior crest of *L. tuberosa* being represented by a tooth.

Measurements.—Male, holotype, length of carapace 12.5, width 13 mm. Immature female, length of carapace 9.8, width 10 mm.

Range.—West coast of Lower California, Mexico; Galapagos Islands. To a depth of 31 fathoms.

Material examined.—

Magdalena Bay, Lower California; lat. 24° 32′ 00″ N.; long. 111° 59′ 00″ W.; 12 fathoms; fne. gy. S.; May 2, 1888; station 2831, *Albatross;* 1 female (21928).

Lower California; off Cape St. Lucas; lat. 22° 52′ 00″ N.; long. 109° 55′ 00″ W.; 31 fathoms; rky.; temp. 74.1° F.; May 1, 1888; station 2829, *Albatross;* 1 male holotype (21575).

Galapagos Islands; reef N. of Tagus Hill, Tagus Cove, Albemarle Island; Mar. 16, 1899; Stanford Univ.; 1 male (25674).

LISSA TUBEROSA Rathbun

Plate 246, fig. 1

Lissa tuberosa Rathbun, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 574, pl. 41, fig. 3 (type-locality, southern part of Gulf of California, 8 fathoms; holotype, Cat. No. 21574, U.S.N.M.).

Diagnosis.—Carapace nodose; two large branchial protuberances; postero-lateral margin sinuous; two crests on carpus of ambulatory legs.

Description.—Surface covered with a dense, short, vascular pubescence. Carapace with two median tuberculated prominences, gastric higher than cardiac, which is continued along median line to posterior margin. Ridge running obliquely backward from gastric prominence almost entirely occupied by two protuberances, one at its middle and one at postero-lateral angle of carapace, which presents a rounded or obliquely truncate outline. Sinus of postero-lateral margin more shallow than in *L. bicarinata.* Margin of hepatic region with a tubercle; of branchial region with several tubercles and a blunt tooth at middle. Hepatic region nearly vertical. Front with a shallow median emargination, from which the margin slopes obliquely backward or is almost transverse; outer corners with a slight tooth, most produced in the young. Preorbital tooth subacute or obtuse.

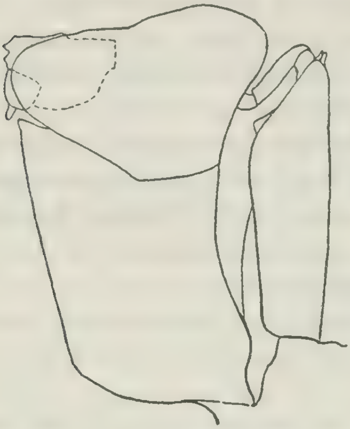
FIG. 107.—LISSA TUBEROSA (21927), MAXILLIPED, × 19.5

Chelipeds heavy in male; ischium with tooth on inner margin; merus with tridentate crest on superior margin; carpus with surface uneven, tubercle at inner angle. Hands broad, compressed, widening distally, inner surface tuberculate; lower margin of propodus with a sinus near its middle; dactylus with acute upper margin; fingers gaping for basal half. Chelipeds of female much smaller. Legs cristate; crest of merus with a thin triangular tooth at distal end; carpus with two triangular crests side by side, divergent, forming a cup; propodus with a triangular superior crest, a tubercle on anterior and posterior surfaces, and with swellings at articulation with dactylus.

Measurements.—Male, holotype, length 16.9, width 15.8 mm. Female (21925), length 14.1, width 14.5 mm; female, (21927), length 12.3, width 11.5 mm.

Range.—Southern part of Gulf of California. 7 to 10 fathoms.

Material examined.—

Gulf of California; April 30, 1888; *Albatross:* Lat. 24° 22′ 30″ N.; long. 110° 19′ 30″ W.; 8 fathoms; brk. Sh.; station 2824; 2 males, 1 is holotype (21574). Lat. 24° 22′ 15″ N.; long. 110° 19′ 15″ W.; 7 fathoms; brk. Co.; station 2825; 1 male, 1 female (21925). Lat. 24° 12′ 00″ N.; long. 109° 55′ 00″ W.; 9½ fathoms; Sh.; station 2826; 1 female (21926). Lat. 24° 11′ 30″ N.; long. 109° 55′ 00″ W.; 10 fathoms; Sh.; station 2828; 1 male, 3 females (21927).

LISSA BRASILIENSIS Rathbun

Plate 73, fig. 2

Lissa brasiliensis RATHBUN, Proc. U. S. Nat. Mus., vol. 64, art. 14, 1923, p. 4 (type-locality, off Cape Frio, Brazil; 35 fathoms; *Hassler* Exped.; holotype, female, Cat. No. 2055, M. C. Z.).

Diagnosis.—Carapace nodose; two large branchial protuberances; surface rough with granules; front strongly widened anteriorly.

Description.—Carapace hairy and granulate, the granules separated except on the summit of the protuberances where they are larger and more or less confluent. The protuberances are arranged as in *L. tuberosa*, but the terminal protuberance of the branchial ridge is more transverse and the posterior, deflected portion of the carapace is broader, its margin more arcuate. Two small anterolateral teeth, one hepatic, one branchial. Rostrum with surface concave from side to side, widening distally, anterior margin in the form of a cupid's bow, with a small median emargination and the outer angles directed upward in a stout, curved, blunt spine.

Only one crest on the carpus of the chelipeds, and a small tubercle outside the crest; two crests on the carpus of the ambulatory legs.

Measurements.—Female, holotype, length of carapace 16.6, width 15 mm.

Range.—Known only from the type-specimen.

Subfamily MAJINAE

Maiinae ALCOCK, Journ. Asiat. Soc. Bengal, vol. 64, 1895, pp. 161, 166 and 236.

Mamaiidae STEBBING, Marine Invest. S. Africa, vol. 4, Cape Town, 1905, p. 22.

Eyes either (1) with orbits, which may be incomplete or complete, but are always complete enough to entirely conceal the fully retracted cornea from dorsal view; or (2) but partially protected by a huge hornlike or antlerlike supraocular spine, or by a large jagged postocular tooth or by both. The eyestalks are usually long.

The orbit, when present, is formed in one of two ways; there is always an arched, often very strongly arched, supraocular eave, and a prominent postocular spine; and either (1) the interval between the eave and the spine is filled by another spine, in which case the roof of the orbit, though fissured is fairly complete; or (2) the supraocular eave and the postocular spine are in contact with one another above, and below with a process of the basal antennal article, in which case the orbit has not only a complete or nearly complete roof, but a complete or nearly complete floor also.

The basal antennal article is always very broad, and is either very extensively produced outwards to aid in forming the floor of the orbit, or is armed distally with one or two large spines.

The external maxillipeds have the merus at least as wide as the ischium. (Alcock.)

KEY TO THE AMERICAN GENERA OF THE SUBFAMILY MAJINAE.

- A^1. Eyes furnished with orbits, complete or fairly so.
  - B^1. Orbit formed (1) by a supraocular hood, the postero-external angle of which is often produced as a spine, (2) by a sharp postocular tooth and (3) by a spine intercalated between the two. Basal antennal article broad but not specially produced to form a floor to the orbit; usually armed at both its anterior angles with a strong spine.
    - C^1. Cardiac lobe not surrounded by a deep trench.
      - D^1. Carapace broadly ovate-triangular. Basal antennal article very broad, three-spined. Rostral horns each with an accessory spine---- **Maiopsis**, p. 337.
      - D^2. Carapace oblong-triangular. Basal antennal article of moderate width, two-spined. Rostral horns simple---- **Paramithrax**, p. 338.
    - C^2. Cardiac lobe surrounded by a deep trench except anteriorly. Carapace narrow, suboval---- **Temnonotus**, p. 340.
  - B^2. Orbits completely enclosed, often outstanding and tubular, and formed (1) by an arched supraocular hood or semi-tubular horn, (2) by a hollowed postocular process and (3) by a remarkable broadening, or by a prolongation, of the anterior part of the basal antennal article; and at the same time affording a complete concealment to the retracted eye.
    - C^1. Orbits not projecting sideways beyond the general outline of the carapace.
      - D^1. Carapace oblong-oval, hairy. Legs and movable articles of peduncle of antennae narrow and bordered with thick fringes of long hair. Dactyls of legs very small, subprehensile. Rostral horns long and narrow---- **Thersandrus**, p. 343.
      - D^2. Carapace subtriangular. Legs cristate.
        - E^1. Merus of ambulatory legs with a thin, lamellate, posterior expansion. No preorbital tooth.
          - F^1. Carapace very high on median line. Basal article of antennae broader than long---- **Hemus**, p. 345.
          - F^2. Carapace not noticeably high on median line, lobulate. Basal article of antennae no broader than long---- **Thoe**, p. 347.
        - E^2. Merus without posterior (or inferior) expansion, but cristate above. A preorbital tooth present---- **Teleophrys**, p. 440.
    - C^2. Orbits projecting sideways more or less beyond the general outline of the carapace, and often tubular.
      - D^1. A very long, elevated, preocular spine, twice as long as remainder of orbit. Legs filiform; movable article of antennal peduncle more slender and cylindrical---- **Picroceroides**, p. 353.
      - D^2. Preocular spine, when present, not remarkably long.
        - E^1. Carapace suboval, anteriorly broadly truncate. Rostrum minute, advanced slightly, if at all, beyond the orbits, which have a forward aspect. First movable article of antennal peduncle with a leaflike outer expansion---- **Pitho**, p. 355.
        - E^2. Carapace when suboval, without a minute rostrum.
          - F^1. Fronto-orbital width great, about three-fourths of branchial width. Orbits with a sideways aspect. Rostral horns slender, contiguous. Movable articles of antennal peduncle filiform. **Leptopisa**, p. 375.
          - F^2. Fronto-orbital width less than in F,^{1} usually about half, or less than half, of branchial width.

G¹. Rostrum small. Carapace ovate, usually broader than long. Orbits not tubular.

  H¹. Lateral margins of carapace laminiform, coarsely dentate. Carapace broadly triangular-ovate. Chelipeds and legs cristate above. Orbital margin not incised, bearing a preocular spine and a postocular tooth **Anaptychus**, p. 377.

  H². Lateral margins armed with four, or three, spines or lobes behind orbit. Legs spinous. Orbital margin spinous or tuberculous **Mithrax**, p. 379.

G². Rostrum of good size, usually with two strong horns.

  H¹. Lateral margin of carapace armed with a series of strong spines. Basal antennal article very broad.

    J¹. Basal antennal article quadridentate. Postocular tooth large, quadrangular, armed with two teeth or spines. **Coelocerus**, p. 446.

    J². Basal antennal article armed with fewer than four spines or teeth. Postocular tooth of moderate size, triangular, armed with only one spine **Stenocionops**, p. 448.

  H². Lateral margin of carapace not armed with a series of strong spines, but with a spine, usually strong, or a tubercle, at the lateral angle of the carapace.

    J¹. Orbits tubular, strongly projecting; basal antennal article very broad **Macrocoeloma**, p. 463.

    J². Orbits little projecting, basal antennal article moderately broad, armed with a prominent spine at antero-external angle **Microphrys**, p. 488.

A². Eyes partially protected by a huge hornlike supraocular spine; orbit unprotected below. Exognath of outer maxilliped with a falciform basal prolongation which is bent around forward and lodged in a groove of the ischium of the endognath, while the merus is extended in a similar way backward into the ischium **Tyche**, p. 507.

Genus MAIOPSIS Faxon

Maiopsis FAXON, Bull. Mus. Comp. Zoöl., vol. 24, 1893, p. 150; type, *M. panamensis* Faxon; Mem. Mus. Comp. Zoöl., vol. 18, 1895, p. 11.

Carapace subtriangular, as broad as long, spinose; rostrum produced into 2 divergent horns with an accessory spine on outer margins; interorbital space broad. Eyes small, eyestalks slender, retractile within orbits. Orbits large, with a forward aspect, incomplete below, upper margin prominent, with 2 deep fissures, and supraocular spines. Epistome short. Basal segment of antennae very broad, 3 prominent spines on anterior margin; flagellum widely separated from cavity of orbit by a broad process of basal segment. Merus of outer maxillipeds notched at antero-internal angle. Chelipeds and legs of moderate length. Carpus of chelipeds elongate, not carinate; chela elongate, slender, fingers canaliculate within, but not spoon-shaped at tips, prehensile edges meeting throughout most of their length, not distinctly toothed. Ambulatory legs spinose. Abdomen of male 7-jointed, terminal joint short and broad. (Faxon.)

Contains but one species.

MAIOPSIS PANAMENSIS Faxon

Plate 247

Maiopsis panamensis Faxon, Bull. Mus. Comp. Zoöl., vol. 24, 1893, p. 151 (type-locality, station 3355, *Albatross*, 182 fathoms; holotype, Cat. No. 4480, M. C. Z.); Mem. Mus. Comp. Zoöl., vol. 18, 1895, p. 13, pl. 2.

Diagnosis.—Carapace thickly covered with spines. Eyestalks slender; orbits with 2 deep fissures above. Basal segment of antennae very broad, and with 3 anterior spines.

Description.—Dorsal surface of carapace thickly set with spines of various sizes and scattered hooked setae. Spines distributed as follows: 5 on the gastric region, 1 on the genital, 1 on the cardiac, 4 on the intestinal, and about 7 on each branchial region. Margin of carapace armed with 12 prominent spines, 3 of which are on the hepatic region. Chelipeds and legs covered with numerous spiny tubercles; meri armed with 3 or more prominent spines at distal end. Chela long and slender, tubercles of hand smaller than on other parts of legs; fingers nearly smooth; a deep pit at base of movable finger. Sternum ornamented with small tubercles along each side of abdomen. First abdominal segment furnished with a bidentate tubercle. (Faxon.)

Measurements.—Male, holotype, length from base of rostrum to posterior margin of carapace, 112; width 113.5; length of rostrum 22, length of horns 11, width between eyebrows 38, length of cheliped 156 mm.

Range.—Known only from the unique specimen dredged in the Bay of Panama; lat. 7° 12′ 20″ N.; long. 80° 55′ 00″ W.; 182 fathoms; bk. G. Sh.; temp. 54.1° F.; Feb. 23, 1891; 1 male (Cat. No. 4480, M. C. Z.).

Genus PARAMITHRAX Milne Edwards

Paramithrax Milne Edwards, Hist. Nat. Crust., vol. 1, 1834, p. 324 (part: §A); type, *P. peronii* Milne Edwards.—Miers, Journ. Linn. Soc. London, vol. 14, 1879, p. 655 (part: subgenus *Paramithrax*, restricted).—Rathbun, Biol. Results "Endeavour," 1909–14, vol. 5, part 1, 1918, p. 17.

Carapace oblong-triangular, usually spinous above. Rostrum composed of two spines divergent from their base. Orbits large, deep, oval, with a forward aspect, incomplete below, upper margin prominent, with two deep fissures and long spines. The eyes when retracted are concealed; stalks rather long, slender, curved, corneae small. Postorbital spine conical, usually remote from orbit so that the eye does not touch it. Basal article of antennae much enlarged, armed with spines; movable portion arising within orbital margin and separated from the cavity of the orbit by a narrow process of the basal article. Anterior margin of buccal cavity straight or nearly so.

Merus of outer maxillipeds notched at antero-internal angle. Chelipeds strong; fingers pointed. Ambulatory legs cylindrical; dactyls unarmed.

Inhabits for the most part Australia, New Zealand and outlying islands. One species only is found in American waters, at Juan Fernandez, Chile.

PARAMITHRAX BÄCKSTRÖMI Balss

Plate 123

Paramithrax peronii Lenz, Zool. Jahrb., Suppl. 5, 1902, p. 756; not *P. peronii* of Milne Edwards and other authors.

Paramithrax bäckströmi Balss, Nat. Hist. Juan Fernandez, vol. 3, 1923, p. 336, text-fig. 3 (type-locality, Masatierra, Juan Fernandez).

Diagnosis.—Near *P. peronii* Milne Edwards,[44] but with a strong, preorbital spine, only 3 median spines and 3 branchial spines and a rougher cheliped.

Description.—A small crab. Carapace covered with curled hairs, finely granulate and armed with a few spines; of the median spines 2 are mesogastric, 1 intestinal; 2 pairs of submedian spines, 1 pair cardiac, the other on the posterior margin. Supraocular eave provided with a strong anterior and a small posterior spine; this is followed by a longer spine which is half as long as the postorbital spine; the latter has a lobe or tooth on its outer margin and is denticulate on inner margin. Two marginal hepatic spines, subequal, directed outward; followed by a small branchial spine, and at the widest part of the carapace by a strong spine; another similar spine above postero-lateral margin. Rostral horns very divergent, acuminate. Basal article of antenna with a large, flat, falciform tooth or lobe at outer angle and a small, sharp tooth at inner angle; inner margin denticulate. Flagellum extending for half its length beyond rostrum. Two sharp spines on the eye, one anterior, on the edge of cornea, the other superior, overlapping cornea.

Merus of outer maxillipeds subquadrate, with the inner, distal angle deeply notched, a tooth at outer angle of notch; palpus long and stout.

Merus and carpus of chelipeds ornamented with flat lobes or teeth; about 6 of these form a superior border on the merus; and 5 smaller lobes mark the lower-outer border; inner and outer surfaces unevenly granulate. On the carpus 3 or 4 lobes form a continuous crest above; only 1 lobe below; inner and outer surfaces uneven, the outer having 2 large tubercles. Upper carina of palm sharp, distally wanting. Fingers crenulate within, moderately gaping, no large basal tooth. Ambulatory legs slender, covered with curled hair; distal articulations of merus acute, in first pair spiniform.

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[44] Hist. Nat. Crust., vol. 1, 1834, p. 324.

Measurements.—Largest male, holotype, median length of carapace 16.3, length from middle of posterior margin to tip of horns 20.8, width (approx.) without spines 12.8, with spines 14 mm. Female, ovigerous (55121), length of carapace from middle of posterior margin to tip of horns 12.3 mm.

Range.—Chile: Juan Fernandez (Lenz).

Material examined.—Juan Fernandez Island; U. S. C. S. S. *Hassler;* 12 males, 6 females (2048, M. C. Z.); 1 male, 1 female (55121, U. S. N. M.).

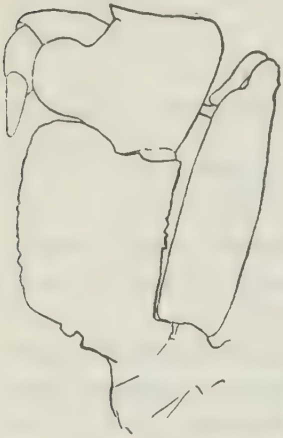

FIG. 108.—PARAMITHRAX BÄCKSTRÖMI, MALE (55121), MEDIAN LENGTH OF CARAPACE 16.3 MM., MAXILLIPED

Remarks.—This species is closely allied to *P. peronii* and some of its differences might be attributed to growth change. On the other hand, the preorbital spine would be unlikely to disappear altogether, or one of the large branchial spines to develop where there was no trace of one in the young. Considering the great distance between their habitats, the difference in the size of mature specimens (mature specimens of *peronii* are from 55 to 80 mm. in length, of *bäckströmi* from 12 to 20 mm.), and the fact that some spines in *bäckströmi* are absent in *peronii*, while the reverse is true of other spines, it seems reasonable to consider the two forms distinct. *P. bäckströmi* has a more oblong, less ovate carapace than *peronii*, increased by the more outstanding rostral and preorbital spines. All the spines except the postorbital, hepatic, anterior branchial and outer antennal, are slenderer and sharper than in the older species. Add to this, the more elaborate ornamentation of arm and wrist in *bäckströmi* and the absence of a large tooth from the dactyl, while one is present in *peronii*.

Genus TEMNONOTUS A. Milne Edwards

Temnonotus A. MILNE EDWARDS, Crust. Rég. Mex., 1875, p. 82; type, *T. granulosus* A. Milne Edwards.

Carapace swollen, slightly pyriform; margins rounded. Cardiac region almost surrounded by a deep trench. Rostrum formed of 2 short horns in the middle and a preorbital spine on either side. The orbital border has a superior fissure; eyes large and retractile into a deep lateral fossette. Inner antennae large, the interantennular partition prolonged in a spine. Basal article of outer antennae wide at base and narrowed at extremity, and separated from lower orbital margin of the carapace by an emargination; it is concealed by the front, but the mobile part of the antennae is visible beside the rostral horns. Merus of outer maxillipeds dilated at outer angle, and notched at its inner angle for insertion of the palp. Legs short, first considerably longer than the others.

Known only from the West Indies.

KEY TO THE SPECIES OF THE GENUS TEMNONOTUS

A¹. Cardiac lobe flat, granulous; walls of cardiac trench bordered by a raised rim ---------- **granulosus**, female, p. 341.
A². Cardiac lobe convex, smooth save for one granule, and with hairy margin; walls of cardiac trench not rimmed ---------- **simplex**, male, p. 342.

TEMNONOTUS GRANULOSUS A. Milne Edwards

Plate 249, figs. 7–9

Temnonotus granulosus A. MILNE EDWARDS, Crust. Rég. Mex., 1875, p. 83, pl. 17, figs. 2–2*c* (type-locality, near Barbados, 100 fathoms, *Hassler* Exped.; holotype, Cat. No. 1937, M. C. Z.).—A. MILNE EDWARDS and BOUVIER, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 392.

Diagnosis.—Cardiac lobe flat, granulous, walls of trench with raised rim. Branchial region granulous, a few of the granules enlarged.

Description of female.—Carapace covered with large granules or tubercles between which are fine punctae, in which minute hairs are inserted; some granules are enlarged, namely, 1 on anterior part of cardiac lobe, 4 on each branchial region and 1 intestinal. Rostral horns small, a little flattened, without granulation but with some hooked hairs. Preorbital spines more divergent than rostral spines, short, scarcely reaching the line of bifurcation of the rostrum. Upper orbital border with 2 teeth, one superior, the other lateral. Basal article of antennae armed with 3 spines; the largest forms its anterior outer angle, another its posterior outer angle, and the third, which is smaller, is placed between the two; second and third articles cylindrical, flagellum small, surpassing by half its length the end of rostrum. Regions of carapace very distinct. Epigastric lobes separated from rest of carapace by a transverse sulcus which unites the two fissures of the orbits; a slightly prominent, lateral, hepatic spine; some other similar but smaller spines border the branchial regions. Cardiac lobe flat, granulous and bounded posteriorly and laterally by a deep trench-like depression with steep, smooth walls, the margins of which are marked by a nongranulate crest; trench absent anteriorly where the gastric region borders the cardiac. Chelipeds scarcely longer than the legs of first pair; hand smooth, fingers sharp; wrist and arm with some pointed tubercles. Legs smooth. Sternal plastron oval and very narrow. (A. Milne Edwards, amended.)

Measurements.—Female, holotype, length of carapace 23, width of same 15 mm.

Range.—Known only from the type-specimen.

Material examined.—Near Barbados; 100 fathoms; December, 1871; *Hassler* Exped.; 1 female, holotype (Cat. No. 1937, M. C. Z.).

TEMNONOTUS SIMPLEX A. Milne Edwards

Plate 249, figs. 10–12

Temnonotus simplex A. Milne Edwards, Crust. Rég. Mex., 1875, p. 84, pl. 17, figs. 3–3c (type-locality, near Barbados, 100 fathoms, *Hassler* Exped.; holotype, Cat. No. 1938, M. C. Z.); Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 2.—Rathbun, Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 255.—A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 393.

Temnonotus granulosus A. Milne Edwards, Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 2; (?) not *T. granulosus* A. Milne Edwards, 1875.

Diagnosis.—Cardiac lobe convex, smooth save for one granule, and with hairy margin; walls of trench not rimmed. Branchial regions partly spinous.

Description of immature male, holotype.—Carapace longer and less convex than *granulosus*, and with fewer granules; most of these are obscured by a dense coat of pubescence, except the spiniform granules, which correspond in position to the enlarged granules of *granulosus*. Rostral horns longer and slenderer; interorbital furrow not well marked. Basal article of antenna narrower and bearing only one small spine which is antero-external. Two lines of granules on the front are continued on the gastric region; this region bears some low tubercles. A rather strong spine on hepatic region. Branchio-hepatic furrow wide and deep. Branchial regions armed with many spines. Cardiac lobe bounded by a depression whose walls are less abrupt than in *granulosus*, and are not margined; the enclosed lobe is much swollen, its surface smooth except for one median granule forward, its margin furnished with a line of small, straight and stiff hairs. Above posterior margin a median spine directed backward. (A. Milne Edwards, amended.)

Measurements.—Immature male, holotype, length of carapace 12, width of same 8 mm.

Range.—Off Havana and Barbados. Depth, 100 to 200 fathoms.

Material examined.—

Off Havana, Cuba; Morro Castle bearing SW. by W., about 2½ miles; 200 fathoms; May 26, 1893; State Univ. Iowa Bahama Exped.; 1 male (Mus. S. U. I.).

Near Barbados; 100 fathoms; *Hassler* Exped.; 1 immature male, holotype (Cat. No. 1938, M. C. Z.).

Off Barbados; lat. 13° 03′ 05″ N.; long. 59° 36′ 18″ W.; 103 fathoms; Co. brk. Sh.; temp. 59.5° F.; Mar. 5, 1879; station 273, U. S. C. S. S. *Blake;* 1 male (Cat. No. 2853, M. C. Z.); identified by A. Milne Edwards as *granulosus*.

Remarks.—In the type male the posterior spine of the basal article of the antenna is either broken or stunted on the right side; on the left side all the spines are missing. In the Havana male the basal article bears two long spines. The male from Barbados which A.

Milne Edwards placed under *granulosus* has the general appearance of his *simplex*, but with two spines on the antennal article.

The figure of *granulosus* given by A. Milne Edwards, which is copied here, does not show the few, extra large tubercles on the carapace which are present in the type. In his figure of *simplex*, also here reproduced, the posterior spine of the carapace is exaggerated and the dorsal spines are represented more spinous than they really are.

It is extremely likely that the *simplex* form (of which 3 males are known) is the male of *granulosus*, of which only a female is known and was taken in the same haul as the type male of *simplex*.

Genus THERSANDRUS Rathbun

Sisyphus Desbonne, in Desbonne and Schramm, Crust. de la Guadeloupe, 1867, p. 20, pl. 3, figs. 11 and 12; type, *S. compressus* Desbonne.—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 123. Not *Sisyphus* Latreille, 1825, a genus of Coleoptera.

Thersandrus Rathbun, Proc. Biol. Soc. Washington, vol. 11, 1897, p. 164; type, *T. compressus* (Desbonne).

Carapace ovoid-oblong, depressed, covered as well as the feet, with short, brownish setae. Front formed of two rostral horns. Preorbital spines wanting. Orbits deep and tubular; upper border cut by a deep fissure; ocular peduncles very slender. Basal article of outer antennae remarkably wide and so united to the carapace that it closes the orbit below; the first movable article is large, a little flat and almost as long as the rostrum; next article more slender but well developed; flagellum small. Antennular fossae wide behind, very narrow in front. Outer maxillipeds wide; merus auriculate at its antero-external angle and deeply cut at the inner angle for the insertion of the palp; exognath narrow.

Chelipeds of male symmetrical, little swollen; fingers touching only at the extremities, which are not spoon-shaped. Ambulatory legs folded forward, the dactylus very slender, very hooked, very sharp and strongly folded under the propodus. Abdomen of male composed of seven distinct articles.

Contains only one species.

THERSANDRUS COMPRESSUS (Desbonne)

Plate 248, figs. 1–8

Sisyphus compressus Desbonne, in Desbonne and Schramm, Crust. de la Guadeloupe, 1867, p. 20, pl. 3, figs. 11 and 12 (type-locality, Moule, Guadeloupe, among algae; cotype in Paris Mus.).—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 124, pl. 24, figs. 1–1*h*.

Diagnosis.—Carapace depressed. Rostral horns small. Antennae and ambulatory legs fringed with long hair.

Description.—Regions of carapace little marked, surface almost smooth. The gastric region shows indications of four tubercles, the three anterior disposed transversely and the single posterior tubercle on the median line; two longitudinal prominences on the interorbital space. An inconspicuous tubercle on the hepatic region makes a slender prominence outside; a marginal tubercle behind the branchio-hepatic suture. Otherwise the branchial regions are smooth, except toward the gastric and cardiac sutures, where they are a little rugose. The rostral horns are a little deflexed, slender, flattened, with convex outer margins and lying almost parallel to each other; interspace deep and narrow, rounded at base. Fronto-interorbital space wide; superior orbital margins rounded. Antennae fringed with long hair.

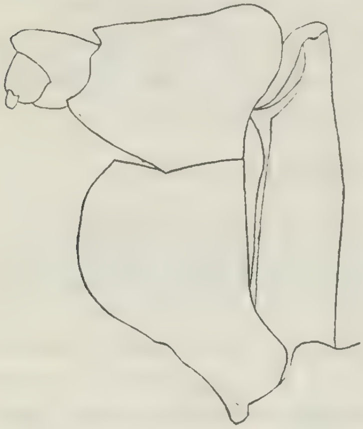

FIG. 109.—THERSANDRUS COMPRESSUS (48744), MAXILLIPED, × 17.1

Merus of chelipeds of adult male slender and unarmed; carpus a little rugose; hand smooth, laterally compressed, without crests; fingers slender, gaping, the dactylus having near its base a stronger tooth than the others. In the female the fingers meet and have no large basal tooth. Ambulatory legs, short, stout, subcylindrical, fringed with long hair on each side, which gives them a broad, flat appearance; those of the first pair notably longer than the others, those of the second pair scarcely reaching the extremity of the merus of the first; those of fifth pair shortest.

Color.—Greenish or brownish (Desbonne).

Measurements.—Male (A. Milne Edwards), length of carapace 23, width of same 16, length of cheliped 23, of first pair of ambulatory legs with the dactylus folded 20, of the next leg in the same position 12 mm.

Range.—West Indies.

Material examined.—

Cuba, on reef Lavesos Italienos, opposite Cayo Lavesos; 2 to 3 fathoms; Co. R. S.; June 2, 1914; station 14, *Tomas Barrera* Expedition; Henderson and Bartsch; 1 male, soft shell (48744).

Guadeloupe; 1 male, cotype (Paris Mus.).

West Indies; 1 female, soft shell (Copenhagen Mus.).

Genus HEMUS A. Milne Edwards

Hemus A. Milne Edwards, Crust. Rég. Mex., 1895, p. 88; type, *H. cristulipes* A. Milne Edwards.—Rathbun, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2, 1901, p. 62.

Carapace thick and swollen; longer than wide. Rostrum small; no preorbital spines; orbit incomplete below. First and second movable articles of the external antennae remarkably wide and flat; the multiarticulate flagellum inserted at the external angle of the second. Merus of outer maxillipeds long and little dilated outwards; exognath very wide in its basal and middle portion, narrowing toward its extremity. Chelipeds small; fingers slightly gaping, strongly bent inward toward their extremity, but scarcely spoon-shaped. Ambulatory legs short, but very strong; merus ornamented with cristiform prolongations; dactyli strong, much curved, without denticulations below.

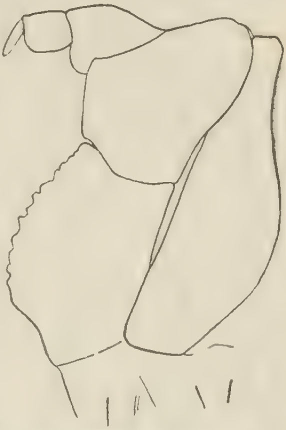

Fig. 110.—Hemus cristulipes (19724), maxilliped, × 30.7

The dilated legs fit together in such a way that with the antennal peduncle and the deflexed rostrum, they form a large cavity underneath the body.

Contains only the two following allied species occurring on opposite shores of the continent: *cristulipes* (Atlantic), *analogus* (Pacific).

KEY TO THE SPECIES OF THE GENUS HEMUS

A^1. Tips of rostrum separated by a sinus wider than either tip. Cardiac prominence high------------------------------------ **cristulipes**, p. 345.

A^2. Tips of rostrum almost contiguous. Cardiac prominence larger, embracing part of the branchial regions and of the intestinal region--**analogus**, p. 347.

HEMUS CRISTULIPES A. Milne Edwards

Plate 124, fig. 1; plate 248, figs. 9–15

Hemus cristulipes A. Milne Edwards, Crust. Rég. Mex., 1875, p. 88, pl. 16, figs. 1–1*f* (type-locality, near Contoy, at the entrance of the Gulf of Mexico, 12 to 18 fathoms; holotype, Cat. No. 1943, M. C. Z.).—Aurivillius, K. Sv. Vet.-Akad. Hand., vol. 23, pt. 1, 1889, p. 45, pl. 3, fig. 6.—Rathbun, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2, 1901, p. 63.

Diagnosis.—Tips of rostrum separated by a sinus wider than either tip. Cardiac region prominent. Margins of merus joints of legs faintly crenulate.

Description.—Body and legs covered with depressed granules. The rostrum is wide, short, bicarinated above, bent downward, and bifurcated at its extremity. Upper orbital border unarmed, but having a narrow fissure; the postorbital cavity into which the eye can be retracted is incomplete. Basal article of outer antennae wide, short, and not spinulous; a notch separates it from lower border of carapace. The carapace is very swollen, especially in the cardiac region, which is markedly prominent. Postorbital portion wide; gastric region high; branchial regions elliptical, bearing on each side two subacute prominences directed outward; the first stronger than the second. Subhepatic region deeply grooved. Chelipeds of male very small and smooth. First pair of ambulatory legs longer and stronger than the others; fifth very small. Merus of all the legs very wide, having above a thin, straight crest and below a lamellar prolongation with a crenulate and arcuate border; other joints of legs small. Abdomen of both sexes with seven free segments, the last elongate in the male.

Measurements.—Female (19724), length of carapace 7.6, width of same 6 mm.

Material examined of Hemus cristulipes

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Lat. N.	Long. W.									
	° ′ ″	° ′ ″			°C						
Gulf of Mexico: Off Cape San Blas, Florida.	Between 29 11 30 and 29 18 15	Between 85 29 00 and 85 32 00	25–27			Feb. 7, 1885	[1]	*Albatross*	1 ♀	19724	
Yucatan Channel:											
Near Contoy Island, Mexico.			12–18	sdy. R.				Wm. Stimpson	1 ♂	1943, M.C.Z.	Holotype.
North of Yucatan	22 07 30	87 06 00	21	wh. R. Co.		Jan. 30, 1885	2363	*Albatross*	1 ♀	15167	
Porto Rico:											
Off Boca Prieta	Fanduco Cay, E., 1¾ miles.		8.5	Co. S.	25	Jan. 25, 1899	6075	*Fish Hawk*	1 ♂	24226	
Off Vieques Island	Culebrita Lighthouse, N.E. by N., 10 miles.		15	Co.	26	Feb. 10, 1899	6091	do	1 ♀	24224	
Off Culebra Island	Culebrita Lighthouse, N. E., 1¼ miles.		15	Co.	25.2	do	6093	do	1 ♂	24225	
Curaçao:											
Schottegat (lagoon), Asiento Bay.			[2]	In horn sponges.		Apr. 3, 1905		J. Boeke	1 ♀	Leiden Mus.	
Spanish Water				In *Porites porites*.		May 5, 1920		C. J. van der Horst.	2 ♀ 1 ♀	Amsterdam Mus. 56854	1 with Rhizocephalid parasite under abdomen.

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[1] Between stations 2369 and 2374.

[2] Shallow water.

Range.—Gulf of Mexico; Central America; Porto Rico; Curacao. Shallow waters to 27 fathoms.

Material examined.—See table, page 346.

HEMUS ANALOGUS Rathbun

Plate 124, figs. 2 and 3

Hemus analogus RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 573 (type-locality, southern part of Gulf of California, 10 fathoms; holotype, Cat. No. 21573, U.S.N.M.).

Diagnosis.—Tips of rostrum almost contiguous. Cardiac prominence large, embracing part of the branchial regions and of the intestinal region. Margins of merus joints of legs distinctly denticulate.

Description.—Differs from *H. cristulipes* as follows: Carapace higher at the cardiac region, sloping more abruptly down toward front. The cardiac prominence is larger, embracing a considerable part of the branchial regions and of the intestinal region. Granulation sharper. Side margins of rostrum convex; terminal teeth nearer together. Preorbital angle rounded, sides rectangular. Outer margin of the first movable joint of the antenna more oblique and crenulate. Merus of legs narrower, their marginal denticles stronger.

Measurements.—Female holotype, length of carapace 8.2, width 6.5 mm.

Range.—Gulf of California.

Material examined.—Southern part of Gulf of California; lat. 24° 11′ 30″ N.; long. 109° 55′ 00″ W.; 10 fathoms; Sh.; April 30, 1888; station 2828, *Albatross;* 1 adult female, holotype, 1 immature female (21573).

Genus THOE Bell

Thoe BELL, Proc. Zool. Soc. London, vol. 3, 1835 (1836), p. 170; type, *T. erosa* Bell.

Platypes LOCKINGTON, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 41 [1]; type, *P. edentata* Lockington.

Carapace of moderate width, thick, lobulate; fronto-orbital region wide; rostrum small; no preorbital spine; orbital border unarmed. Basal article of antenna large; next article rather flat and attached to first joint near rostrum, but at a great distance from orbit. Exognath of outer maxillipeds very wide in middle. Sternal plastron almost circular. Chelipeds long and usually strong; hand compressed; fingers spoon-shaped, gaping in the adult. Ambulatory legs wide, decreasing rapidly in length from the first to the fourth; merus joints with longitudinal crests; last two joints short and nodose.

An American genus, ranging from the Florida Keys to the West Indies and from the Gulf of California, Mexico, to Ecuador and the Galapagos Islands.

KEY TO THE SPECIES OF THE GENUS THOE

A^1. Upper surface of merus and outer surface of carpus of cheliped not excavate.
  B^1. Carapace and basal segment of antennae without spines ---- **puella, p. 348.**
  B^2. Carapace with a spine at postero-lateral angle; basal segment of antennae with two distal spines ---- **aspera, p. 352.**
A^2. Upper surface of merus and outer surface of carpus of cheliped deeply excavate into several contiguous depressions.
  B^1. Upper or anterior margin of legs entire or nearly so.
    C^1. One anterior tooth or lobe on basal antennal article. Two rows of deep excavations on arm ---- **erosa, p. 351.**
    C^2. Two anterior teeth or lobes on basal antennal article. Outer row of excavations on arm obsolescent ---- **panamensis, p. 351.**
  B^2. Upper or anterior margin of legs spinous, the proximal spine of the series not marginal but situated on the posterior surface and conspicuous in legs of first three pairs. Two anterior teeth or lobes on basal antennal article ---- **sulcata, p. 349.**

Analogous species on opposite sides of the continent: *puella* (Atlantic), *sulcata* (Pacific).

THOE PUELLA Stimpson

Plate 125, figs. 1 and 2

Thoe puella STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 178 (type-locality, Tortugas Is., Florida; type not extant).—A. MILNE EDWARDS, Crust. Rég. Mex., 1873, p. 122, pl. 19, figs. 3–3*e*.

Pisa latipes DESBONNE, in Desbonne and Schramm, Crust. de la Guadeloupe, 1867, p. 19 (type-locality, Guadeloupe; cotype in Paris Mus.).

Diagnosis.—Sides of carapace perpendicular and nearly straight. Basal antennal joint not grooved. Margins of merus-joints of ambulatory legs thin.

Description.—Antero-lateral margins straight or nearly so; lobulations of dorsal surface well marked, covered with berry-like bunches of granules crowded together. Rostral horns separated by a deep, narrow fissure. Antennae fringed with long hair; basal joint as wide as long, with antero-external angle a blunt tooth. Arm and wrist of chelipeds covered with fine granulations, the arm with a line of tubercles on upper margin; hand smooth and shining except near articulation, where it is granulate, superior margin sharp for its proximal half; fingers finely serrulate within, a very shallow tooth near base of dactyl in male; fingers rather widely gaping in adult male; narrowly gaping in adult female. The inferior laminate crests on merus joints of ambulatory legs longer than superior and about twice as wide; their upper surfaces concave,

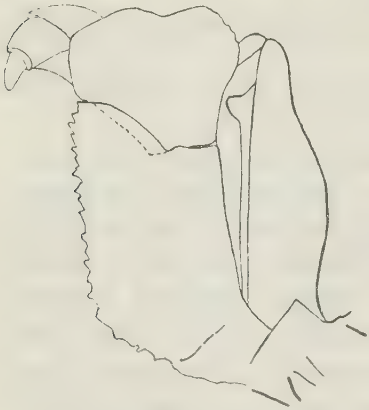

FIG. 111.—THOE PUELLA (14442), MAXILLIPED, × 18.2

margins undulate and finely crenulate; the carpus joints have a bilobed superior crest and a tooth on inferior margin; propodal joints with a narrow crest on each side and a blunt spine above.

Color, reddish (Desbonne), or bright red, with yellow patches (Stimpson.)

Measurements.—Male (46740), length of carapace 11.8, width of same 10.2 mm.

Habitat.—The broken pieces of coral lying in the fringing shallows of the cays frequently have bits of bright red sponge scattered over them, and it is on such broken pieces that this crab occurs. It is almost impossible to distinguish it from the sponge alongside, owing to the close imitation in size, outline, and color, and to its remaining motionless till all danger is apparently over. As the resemblance is so perfect as to deceive the keenest eyes, it is certain that the mimicry must secure absolute safety from the many marine creatures which roam about seeking what they may devour. (P. W. Jarvis, in The Jamaica Post, December 16, 1897.)

Range.—Florida Keys; West Indies to Curaçao.

Material examined.—

Key West, Florida; 1885; H. Hemphill; 3 males, 1 female (14442).

Sand Key, Florida; reef; J. B. Henderson: 1 ma (46740). May, 1913; 1 male (46045).

Bush Key, Tortugas; June, 1921; Paul Bartsch; 2 males (56218).

Tortugas Reefs, Florida; J. B. Henderson: 2 males, 1 ovigerous female (46739). 1912; 1 male (45679).

Tortugas, Florida; June 5–8, 1893; State Univ. Iowa Biol. Exped.; 1 female (Mus. S. U. I.).

Jamaica; 1891; T. H. Morgan; 1 female (17211).

Ponce, Porto Rico; reefs; January 30, 1899; *Fish Hawk;* 1 male (24220).

St. Thomas; 1884; *Albatross;* 1 female (16201).

Caracas Bay, Curaçao; in coral; 1920; C. J. van der Horst; 1 male, 2 females (1 ovig.) (Amsterdam Mus.); 1 female (56858).

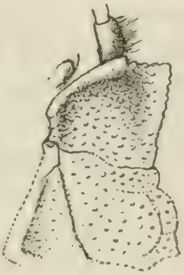

Fig. 112.—Thoe puella, female (14442), basal antennal article and subhepatic region, × 9

THOE SULCATA Stimpson

Plate 125, figs. 3 and 4

Thoe sulcata Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 177 (type-locality, Cape St. Lucas, Lower California; cotypes, Cat. No. 1222, M. C. Z.).—A. Milne Edwards, Crust. Rég. Mex., 1875, pl. 19, figs. 5–5*e;* 1878, p. 121.—Streets and Kingsley, Bull. Essex Inst., vol. 9, 1877 (1878), p. 104.

Platypes edentata Lockington, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 41 [1], p. 65 [3] (type-locality, Mazatlan; type not extant).

Diagnosis.—Sides of carapace arcuate. Basal antennal article with a longitudinal groove parallel to its outer margin. Two rows of deep excavations on arm. Ridges and margins of ambulatory legs thickened; upper margin of merus spinous.

Description.—Of larger size than *T. puella;* antero-lateral margins more convex; areolations and berry-like tubercles less strongly marked. Rostral horns contiguous, tips beadlike. The basal article of the external antennae is exposed from above, and bears two anterior teeth or lobes; it is separated from the fronto-orbital region by a deep suture or pit, and there is also a deep pit on the upper surface of the spine or tooth at its exterior angle; below, a shallow groove runs parallel with the outer margin. The first two movable articles of the antennae are broad and pitted, the remainder are very slender.

The merus of the chelipeds has two longitudinal but not contiguous rows of deep excavations; hands carinate beneath; in the adult male the fingers are very slender, the excavate tips are shorter than in *puella,* and the large tooth of the dactylus is near its middle and is slender, as long as it is wide. Both fingers more or less denticulate within. Merus of legs deeply bisulcate longitudinally by blunt ridges and armed along the superior margin with a series of strong, short spines which are not concealed by the thick hair; the proximal spine of the row is out of line and situated on the posterior surface instead of on the margin and is a conspicuous feature in the legs of the first three pairs; lower limb of merus narrower than in *puella* and with thickened margin; both margins fringed with hair. Superior margin of carpus thick, arcuate, inferior margin unilobate.

Color.—Chelipeds, in alcohol, a bright, shining carmine tint (Lockington).

Measurements.—Male (47121), length of carapace 15.1, width of same 14 mm. Length of type-specimen 22.8 mm. ($\frac{9}{10}$ inch).

Range.—West coast of Mexico from Gulf of California (Tepoca Bay) to State of Oaxaca.

Material examined.—

Tepoca Bay, Sonora, Mexico; April 25, 1921; Fred Baker, California Academy Exped.; 1 male (Cal. Acad. Sci.), with chelipeds not fully developed.

San Francisquito Bay, east coast Lower California; beach; April 9, 1911; *Albatross;* 1 male (55767).

Mazatlan, Mexico; A. Agassiz; 3 males, 2 females (2097, M. C. Z.).

Cape St. Lucas, Lower California; John Xantus; 9 males, 3 females (1222, M. C. Z.).

Puerto Angel, Oaxaca, Mexico; 1910; C. R. Orcutt; 2 males (47121).

THOE PANAMENSIS Nobili

Plate 125, figs. 5 and 6

Thoe erosa A. Milne Edwards, Crust. Rég. Mex., 1875, pl. 19, figs. 4–4*d*; 1878, p. 121 (not synonymy).—Rathbun, Mem. Mus. Comp. Zoöl., vol. 35, 1907, p. 74 (not all synonymy). Not *T. erosa* Bell, 1836.

Thoe panamensis Nobili, Boll. Mus. Zool. Anat. Comp. R. Univ. Torino, vol. 16, No. 415, 1901, p. 30 (type-locality, Isola Flamenco, Bay of Panama; type in Mus. Turin).—Rathbun, Proc. U. S. Nat. Mus., vol. 38, 1910, pp. 575 and 618; the locality "Ecuador" is an error.

Diagnosis.—Very near *T. sulcata.* Outer row of excavations on arm obsolete or obsolescent. Merus of ambulatory legs entire or obscurely spinulous above.

Description.—Panama specimens differ from more northern ones in the above characters chiefly. However, the obsolescence of the outer row of excavations on the arm is not altogether constant. The old male in *panamensis* has widely gaping fingers, as in *sulcata*, but the tooth on the dactyl at the middle of the gape is broader than long, its edge tridentate or tricrenulate. On the merus of the legs no spines or spinules show among the marginal hairs, nor is there a spine on the posterior surface near its proximal end.

Perhaps not specifically distinct from *sulcata.*

Measurements.—Male (48786), length of carapace 13.7, width of same 12.3 mm.

Range.—Bay of Panama.

Material examined.—

Taboguilla Island; between tide-marks; October 31, 1899; *Albatross;* 1 male (7072, M. C. Z.).

Taboga Island; June, 1914; J. Zetek; 1 male, 1 female (48786).

Perico Island; October 26, 1904; *Albatross;* 1 male (33390).

Panama; May, 1863; Dr. Sternberg; 2 males, 2 females (1945, M. C. Z.).

Panama; A. Agassiz; 3 ovigerous females (988, M. C. Z.); identified by Stimpson as *T. sulcata.*

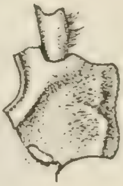

Fig. 113.—Thoe panamensis, female (48786), basal antennal article, × 9

THOE EROSA Bell

Plate 249, figs. 1–6

Thoë erosa Bell, Proc. Zool. Soc. London, vol. 3, 1835 (1836), p. 171 (type-locality, Galapagos Islands; type not extant); Trans. Zool. Soc. London, vol. 2, 1836, p. 48, pl. 9, figs. 4, 4 *k*–4 *o*.—Nobili, Boll. Mus. Zool. Anat. Comp. R. Univ. Torino, vol. 16, No. 415, 1901, p. 30; not A. Milne Edwards, Crust. Rég. Mex., 1875, pl. 19, figs. 4–4 *d*; 1878, p. 121, nor Rathbun, Mem. Mus. Comp. Zoöl., vol. 35, 1907, p. 74.

Diagnosis.—One anterior tooth or lobe on basal antennal segment. Two rows of deep excavations on arm. Both fingers strongly arcuate; gaping edges entire except for one tooth on dactyl.

Description after Bell and Nobili.—Carapace rounded behind, depressed, covered with low tuberosities; lateral margin without teeth, perpendicular. Rostrum minute, tapering to the point, which is slightly divided. Basal antennal joint with but one anterior tooth or lobe (according to Bell's figure 4 *k*) and that at the outer angle.

Chelipeds in the male longer and much more robust than the ambulatory legs. The arm has two series of quadrilateral excavations on the upper and outer surfaces, diminishing backwards. Hands tumid, convex inwardly and outwardly, smooth, carinated beneath, fingers meeting only at point, notably arcuate and leaving a large interspace except at tips, edge not excavated nor serrated, but with a single bifid tubercle near the middle of the movable finger. Legs flattened above, longitudinally rugose, the sides furnished with rather long hairs.

Color.—Light yellowish brown above, paler beneath (Bell).

Measurements.—Length of carapace of type-specimen 13.5 mm. (6 lines), width of same 11.3 mm. (5 lines).

Range.—Galapagos Islands, 7 fathoms, sandy mud (Bell); Bay of Santa Elena, Ecuador (Nobili).

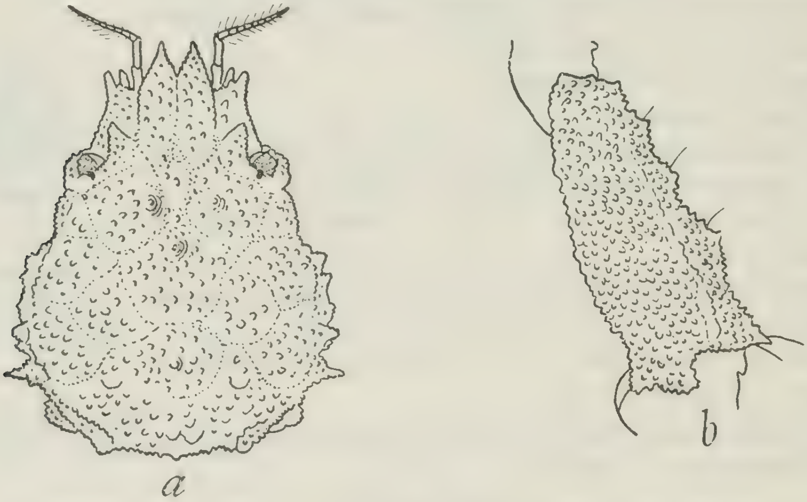

FIG. 114.—THOE ASPERA, MALE (23773), TOTAL LENGTH OF CARAPACE 10 MM. (AFTER RATHBUN.) *a*. CARAPACE, DORSAL VIEW. *b*. MERUS OF A RIGHT AMBULATORY LEG

THOE ASPERA Rathbun

Plate 124, figs. 4 and 5

Thoe aspera RATHBUN, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2, 1901, p. 63, text-fig. 10 (type-locality, Ensenada Honda, Culebra; holotype, Cat. No. 23773, U.S.N.M.).

Diagnosis.—Carapace armed with some sharp spines and tubercles. Rostral horns separated by a large V. Basal antennal joint much longer than broad. Merus of legs moderately dilated.

Description.—Carapace more elongate than *T. puella*, the gastro-cardiac suture farther back, or halfway between posterior margin of carapace and posterior margin of orbit. Lobules separated by shallower depressions than in *T. puella;* protogastric and mesogastric lobules each surmounted by a high, acute tubercle; cardiac lobule with a similar but lower tubercle. Postero-lateral angle with a short spine; above and anterior to the spine, a sharp tubercle; another tubercle on each side of the middle near the posterior margin; and in front of these last still another tubercle on the branchial region. Rostral horns curving slightly inward and separated by a large V-shaped sinus. Basal antennal joint narrower than in other species of the genus, considerably longer than broad and armed distally with two spines, outer one above inner, both visible in a dorsal view; outer margin concave, a longitudinal crest at outer third; both crest and margin finely crenulate. Cheliped of male (perhaps not fully developed) rather feeble. The arm, wrist, and proximal fourth of palm are finely granulate; the arm has sharp granulated margins. The greater part of the palm is smooth and shining; three times as long as wide; the fingers gape slightly for two-thirds their length and are finely denticulate. Crests of merus joints of ambulatory legs thin and of about equal width; the anterior crest has one or two teeth, the posterior one has a rectangular distal prolongation. The carpus joints have a triangular inner tooth and a narrow outer crest. Surface sparingly pubescent; some longer hairs form lines on the rostrum and in the depressions of carapace.

Measurements.—Male, holotype, length of carapace 10, width 8.2 mm.

Range.—Porto Rico.

Material examined.—Ensenada Honda, Culebra Island, Porto Rico; February 9, 1899; *Fish Hawk;* 1 male, holotype, 1 female (23773).

Genus PICROCEROIDES Miers

Picroceroides Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 77; type, *P. tubularis* Miers.—Rathbun, Bull. U. S. Fish Comm., vol. 20, for 1900, part 2 (1901), p. 76.

Carapace narrow and rounded behind, constricted behind the orbits, which are tubular and project laterally. The width at the orbits equals or exceeds the greatest width at the branchial regions. The orbits have a long preocular and a short postocular spine and are emarginate above and below. Rostral horns long, slender, and widely separated at base. Abdomen seven-jointed and transversely ridged in both sexes; in the male the ridges correspond to similar elevations on the sternum, which are rounded and separated by deep depressions. Epistome transverse. Antennular fossettes small, deep, and well defined. Basal joint of antenna considerably enlarged and armed with an oblique keel immediately behind the next joint; following joints slender. Outer maxillipeds small; merus joints distally truncate, antero-external angle obtuse, antero-internal angle emarginate.

Chelipeds moderately elongate, rather slender; palms slightly compressed and more than twice as long as broad; fingers with an intermarginal hiatus at base. Ambulatory legs very slender and of moderate length, joints subcylindrical, unarmed; dactyli slightly arcuate.

Contains only one species.

PICROCEROIDES TUBULARIS Miers

Plate 126; plate 254, figs. 2–5

Picroceroides tubularis Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 77, pl. 10, figs. 1–1*c* (type-localities, Fernando Noronha and Bahia, in shallow water; types in British Mus.).—Rathbun, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2, 1901, p 76.

Diagnosis.—Orbits tubular. Rostral and preocular horns very long and slender. Ambulatory legs slender. Abdomen and sternum deeply furrowed.

Description.—Carapace moderately convex, much longer than broad, but little dilated at branchial regions. Frontal space concave; gastric region somewhat elevated and obscurely tuberculated; the cardiac region bears a rounded prominence and the intestinal region a slender spine; the cervical and branchio-cardiac sutures are continuous and form a longitudinal sinus, separating the branchial from gastric and cardiac regions. The tubular orbits project laterally to a remarkable degree, and each bears a very long preocular and a small postocular spine, and has two notches in the inferior and one in superior margin. Rostral spines in adult male four-fifths the length of remainder of carapace; very slender, slightly curved, and remote from each other at base. The basal antennal joint has, besides the antero-internal crest, two small teeth on margin of orbit and a third on distal margin.

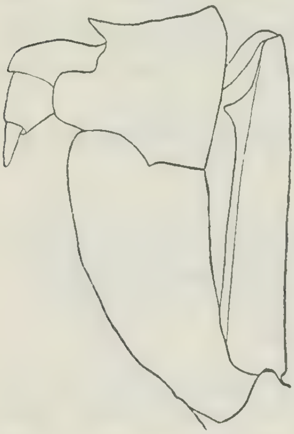

Fig. 115.—Picroceroides tubularis (24082), maxilliped, × 8.58

Chelipeds unevenly granulated; the outer surface of palm has a slight longitudinal depression near upper surface; the dactylus has a strong tubercle near its base. Carapace and ambulatory legs rather thinly pubescent; the margins of rostrum and of the free peduncular joints of antennae have some longer hairs, some of which are clavate.

Measurements.—Male (24082), median length of carapace, from posterior to anterior margin, 22.5; length of horn 19; width of

Material examined of Picroceroides tubularis

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.
	Latitude N.	Longitude W.								
	° ′ ″	° ′ ″			°F					
Bahama Banks						May 18, 1893		State Univ. Iowa Bahama Exped.	1 y	Mus. S. U. I.
Off Miami, Florida			10–40					J. B. Henderson	1♂	49084.
Do			60					do	1 ovig. ♀	47106.
Off Havana, Cuba	23 10 25	82 20 21	33	Co	79.1	Jan 17, 1885	2324	*Albatross*	1♂	9495.
East of Cape Cruz, Cuba	19 48 00	77 17 00	33	Co		1880	XXI	*Blake*	1♂	4468, M. C. Z.
Between Jamaica and Haiti	17 44 05	75 39 00	23	Co. brk. Sh		Feb. 29, 1884	2138	*Albatross*	1♂ 1♀	6928.
Off St. Thomas, West Indies	Sail Rock, W. by N. ½ N., 6 miles.		20–23	Co		Feb. 6, 1899	6079	*Fish Hawk*	2♂ 1♀ 2 y	24082.

carapace at branchial regions 15.4, width between tips of postocular spines 17 mm.

Range.—From Bahama Banks and Florida Keys to Bahia, Brazil. Shallow water to 60 fathoms.

Material examined.—See table, page 355.

Genus PITHO Bell

Pitho Bell, Proc. Zool. Soc. London, vol. 3, 1835 (Feb. 24, 1836), p. 172; type, *P. sexdentata* Bell.

Othonia Bell, Trans. Zool. Soc. London, vol. 2, 1836, p. 55; type, *O. sexdentata* (Bell). Name preoccupied by Johnston, in Loudon's Mag. Nat. Hist., vol. 8, March, 1835, p. 181, for a genus of worms.

Piloronus Gistel, Natur. Thierreichs, 1848, p. X. (Substituted for *Pitho* Bell, said to be preoccupied by *Pytho* Fabricius).

Engyzomaria Gistel, Natur. Thierreichs, 1848, p. X. (Substituted for *Othonia*, preoccupied).

Microrynchus Desbonne, in Desbonne and Schramm, Crust. Guadeloupe, 1867, p. 20; type, *M. lherminieri* Desbonne.

Carapace truncate in front; frontal region wide; rostrum very short, formed of two small teeth. Orbits small, tubular, deep, and directed forward; eyes slender. Outer antennae short; basal article lamellose, forming floor of orbit; next article flat, short, and broad, outwardly expanded; third article flat, but smaller; flagellum very small. Carapace oblong-oval, antero-lateral and postero-lateral borders forming together an arcuate line. Merus of outer maxillipeds dilated outwardly and very slightly notched on inner side for insertion of palpus. Chelipeds with fingers spoon-shaped; hands more or less compressed. Ambulatory legs stout and rather short; dactyli sharp, spinulous below. Abdomen of male narrow and formed of seven articles. Straight, stiff hairs border the antennae and are arranged in a series of tufts on the pterygostomian regions.

An American genus, ranging from Beaufort, North Carolina, to Cape St. Roque, Brazil, and from Magdalena Bay, Lower California, Mexico, to Panama and the Galapagos Islands.

KEY TO THE SPECIES OF THE GENUS PITHO

A^1. Second and third lateral teeth, exclusive of tooth at orbital angle, partially united at base.
  B^1. First movable segment of antenna much wider than long, its outer lobe strongly produced laterally. Lateral teeth of carapace blunt-tipped in the adult------------------------------------**aculeata**, p. 357.
  B^2. First movable segment of antenna little, if any, wider than long, its outer lobe produced as much anteriorly as laterally. Lateral teeth of carapace acute.
    C^1. Lateral teeth subequal in size. Carapace subcircular, front narrow. **laevigata**, p. 372.
    C^2. Lateral teeth not subequal.
      D^1. Last two lateral teeth not much, if any, smaller than the others.
        E^1. Carapace strongly tuberculate. Second lateral tooth smaller, but not much smaller, than first and third-----------**picteti**, p. 359.
        E^2. Carapace nearly smooth.
          F^1. Second lateral tooth very small, much smaller than first and third teeth--------------------------------**anisodon**, p. 368.
          F^2. Second lateral tooth of considerable size, slender. **laevigata, variety**, p. 373.
      D^2. Last two lateral teeth much reduced, at least in male. Manus of adult male broad, compressed.
        E^1. First movable segment of antenna slightly wider than long. Lateral teeth sharper in female than in male, the last two teeth more prominent than in male------------------**lherminieri**, p. 362.
        E^2. First movable segment of antenna longer than wide. Fourth lateral tooth subequal to first three in female, fifth tooth smaller. Fourth and fifth teeth much reduced in male. **quinquedentata**, p. 361.
A^2. Second and third lateral teeth not united at base.
  B^1. More than four lateral teeth. Carapace conspicuously granulated.
    C^1. Lateral teeth five (exceptionally four), dentiform, their edges denticulate--**mirabilis**, p. 366.
    C^2. Lateral teeth six, spiniform----------------------**sexdentata**, p. 367.
  B^2. Four lateral teeth or spines.
    C^1. Lateral teeth long and narrow, spiniform. Rostral teeth acutely pointed----------------------------------**quadridentata**, p. 369.
    C^2. Lateral teeth short and broad. Rostral teeth arcuate or very obtuse-angled--**dispar**, p. 374.

ANALOGOUS SPECIES ON OPPOSITE SIDES OF THE CONTINENT

Pacific	Atlantic
aculeata.	*picteti.*
lherminieri.	*quinquedentata.*
mirabilis.	*sexdentata.*

PITHO ACULEATA (Gibbes)

Plate 127; plate 251, fig. 1

Hyas aculeata Gibbes, Proc. Amer. Assoc. Adv. Sci., vol. 3, 1850, p. 171 [7] (type-localities, Key West and "Florida"; types not extant).

Othonia aculeata Stimpson, Ann. Lyc. Nat. Hist. N. Y., vol. 7, 1859, p. 49; Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 116 (part).—Miers, Journ. Linn. Soc. London, Zool., vol. 14, 1879, p. 673, pl. 13, fig. 6.—Kingsley, Proc. Acad. Nat. Sci. Philadelphia, 1879 (1880), p. 388 (part); not *O. aculeata* A. Milne Edwards, Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 2.—Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 255, pl. 34, figs. 1 and 2.

Pitho aculeata Rathbun, Ann. Inst. Jamaica, vol. 1, 1897, p. 7; Bull. U. S. Fish Comm., vol. 20, for 1900, part 2, 1901, p. 77.

Diagnosis.—First movable segment of antenna much wider than long. Lateral teeth of carapace obtuse, the second and third united at base. Fronto-orbital width great. Hands of adult male broad.

Description.—Carapace a little longer than broad, almost smooth above in adult, more or less tuberculous and granulous in young. Width between outer orbital angles two-thirds of entire width. Preorbital and external orbital angles subacute. The outer margins of the two external orbital teeth diverge anteriorly. Antero-lateral margins armed with five teeth (exclusive of orbital angle) more or less triangular, obtuse in the old, acute or subacute in the young, the second and third coalesced at their base, the fourth and fifth small. Frontal teeth small, flat, triangular, obtuse. Basal article of antennae wide; that portion of its anterior margin situated outside of the insertion of the next article is denticulate; a deep groove between this crest and frontal border, a second groove on the carapace parallel to first. First movable article of antennae with an outer lobe much produced laterally.

Chelipeds strong in the full-grown male, about 1.5 times as long as carapace; arm angular, with three depressed tubercles on upper margin; wrist with a smooth longitudinal crest; palms compressed, about 1.5 times as long as wide; fingers widely gaping for their distal two-thirds, with a tooth near the base of the dactyl. Chelipeds in the young male and in the female short and weak; fingers evenly dentate and in contact. The carpus joints of the ambulatory legs have a broad, deep groove on the outer surface.

Appendages of first segment of abdomen in the male are brown in color for their distal half, the brown parts in contact for half their length, diverging at extremities in slight curves convex to each other, each appendage terminating in a right-angled hook, the point of which is directed toward median line of carapace (fig. 116, *c*).

Color.—The following notes on the several lots of specimens obtained at Ragged Key were made by Mr. Henderson from the living specimens:

46032 and 46034. Ground of back dirty white with large square olive green maculations; claws and legs the same; last segment of claws the same green with irregular white dots; tips of claws white; under surface of body pure white and green.

46033. No two individuals alike; the general color of the back varies from almost black to olive green or chocolate, usually with lighter spaces of cream white in center of back, or dotted with cream white on hinder portion and on legs and claws; under side the same color but light; claws the color of back.

46035. Back ashen gray with light olive green flecks. Same color pattern on legs and pincers. Individuals vary in color; sometimes the green becomes yellowish. One or two are olive brownish, in which case there are whitish flecks scattered generally over the whole.

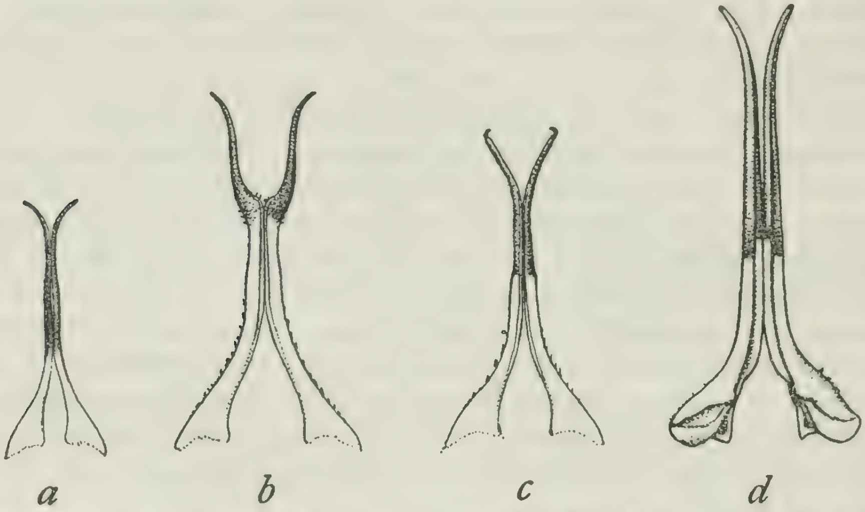

FIG. 116.—PITHO, APPENDAGES OF FIRST ABDOMINAL SEGMENT OF MALE OF DIFFERENT SPECIES. *a*. LHERMINIERI. *b*. ANISODON. *c*. ACULEATA. *d*. MIRABILIS. (*a*, *b*, AND *c*, AFTER RATHBUN)

Measurements.—Male (9283), length of carapace, measured to tips of rostral teeth 27.5; greatest width of carapace, teeth included, 26 mm.

Range.—Bahamas; Florida Keys; West Indies; northern coast of South America.

Material examined.—

Bahamas; 1886; *Albatross:* Nassau; 1 ovigerous female (11401). New Providence; 1 male, 1 female (16309).

Spanish Wells, Bahamas; July 12–13, 1893; State Univ. Iowa Exped.; 1 male, 2 females (Mus. S. U. I).

Ragged Key, Florida; on reef; May, 1913; J. B. Henderson; 7 males, 21 females (16 ovig.) (46035); 3 males (46034); 3 males, 3 females (1 ovig.) (46033); 5 males (46032).

Key Largo, Florida; H. Hemphill; 6 males, 6 females (14049).

Indian Key, Florida; H. Hemphill; 36 males, 30 females (14054).

Lower Metacumbe Key, Florida; H. Hemphill; 2 young (15809).

Key Vaccas, Florida; on banks, low tide; H. Hemphill; 1 male, 10 females (14072).

Key West, Florida: H. Hemphill; 110 specimens. December, 1883; D. S. Jordan; 2 females (5751). April 15–27, 1884; *Albatross;* 5 males, 8 females (7518). C. N. E. Eliot; 1 young (22988). C. J. Maynard; exchange with Boston Soc. Nat. Hist.; 4 males, 1 ovigerous female (53034).

Dry Tortugas, Florida: 1884; Edward Palmer; 2 females (13896). 6 dried specimens (Brit. Mus.).

Dry Tortugas, Florida; 1893; State Univ. Iowa Exped.: June 5–8; 2 females, 1 young (Mus. S. U. I.). Shallow water; June 13; 1 male, 3 females (Mus. S. U. I.). Gulf weed; June 13; 1 male (Mus. S. U. I.).

Sarasota Bay, Florida; 1 young (Union College coll.).

Florida: C. J. Maynard; exchange with Boston Soc. Nat. Hist.; 1 male (53035). William Stimpson; 1 male, 1 female (Paris Mus.).

Cuba; 1914; Henderson and Bartsch, *Tomas Barrera* Exped.: Cabañas; on sand, shell, grass to mud bottom; June 8 and 9; station 16; 1 ovigerous female (48659). Bahia Honda; June 7; 2 males, 2 females (48674). Cayo Arenas; 2 fathoms; May 12; station 3; 1 young female (48714); 1 male (48715).

Jamaica: Off Montego Bay Point; June 28, 1910; E. A. Andrews; 1 male (43018). Lime Cay; P. W. Jarvis; specimens returned to sender.

Porto Rico; 1899; *Fish Hawk:* Boqueron Bay; January 25; 1 male, 1 female (24087). Ensenada Honda, Culebra; February 9; 1 young, 1 broken (24103). Culebra; February 11; 1 male, 1 female (24414).

St. Thomas; A. Milne Edwards; 1 male (Paris Mus.).

Guadeloupe (Geneva Mus.).

Old Providence; April 4–9, 1884; *Albatross:* 1 male (18568).

Aruba, Dutch West Indies; among algae in shallow water of lagoon; August 2, 1905; J. Boeke; 1 male (42982), 1 male (Leiden Mus.).

Curaçao, rifwater; shallow water; algae; in beam trawl; May 26, 1905; J. Boeke; 1 female (Leiden Mus.).

Caracas Bay, Curaçao; in sand; May 13, 1920; C. J. van der Horst; 1 male (Amsterdam Mus.).

PITHO PICTETI (Saussure)

Plate 130, figs. 2 and 3; plate 252, fig. 1

Othonia picteti SAUSSURE, Rev. et Mag. de Zool., ser. 2, vol. 5, 1853, p. 357, pl. 13, fig. 2 (type-locality, Mazatlan; type in Geneva Mus.?).—STIMPSON, Journ. Boston Soc. Nat. Hist., vol. 6, 1857, p. 455.—A. MILNE EDWARDS, Crust. Rég. Mex., 1875, p. 118.

Micippa ovata LOCKINGTON, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 68 [6] (type-localities, Port Escondido, Mulege Bay, Los Angeles Bay, San José Island, and La Paz; types not extant).

Micippa ovata, var. *laevis* Lockington, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 69 [7] (type-locality, Gulf of California; type not extant).

Othonia nicholsi Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 257, pl. 35, fig. 3 (type-locality, Gulf of California, 45 fathoms; holotype, Cat. No. 15822, U.S.N.M.).

Pitho quinquedentata Rathbun (not Bell), Proc. U. S. Nat. Mus., vol. 21, 1898, p. 578; vol. 38, 1910, p. 573 (part).

Diagnosis.—Lateral teeth of carapace five, acute, the second and third united at base. Male appendages distally lyre-shaped. Outer margins of outer orbital teeth anteriorly convergent.

Description.—Carapace pubescent, tubercles furnished with long hairs. Legs long-hairy. Carapace shaped much as in *P. aculeata*, but fronto-orbital region narrower, only a little wider than half the carapace width. The outer margins of the outer orbital teeth anteriorly converge instead of diverge, as in *aculeata*. Carapace ornamented with strongly marked tubercles, the larger of which are spinous and are arranged as follows: Two on the median line of the gastric region, the anterior the smaller and sometimes bifid; two placed transversely on the anterior part of the cardiac region; four or five on each branchial region. Of smaller tubercles, there are two on each protogastric lobe, one almost in the same line on the mesogastric region, behind the latter two close together, and two side by side behind the median spine. On the cardiac region there is a curve of three granules in front of the middle and a curve of four behind the middle, the curves subparallel and concave behind. The branchial region has two lines of granules on the posterior half, one line following the general direction of the postero-lateral margin, the other line shorter, running along the inner boundary of the region, the two lines meeting at an acute angle. There are other granules scattered on the carapace but no conspicuous protuberances on the hepatic region.

Lobes of rostrum acute, a denticle on their inner margins which is partially superimposed on the lobe. Orbital angles acute or subacute. Antero-lateral teeth five, after the orbital angle, curved, acute, the second smaller than the third and basally joined to it. Carapace widest at the fourth tooth. Fifth tooth nearly as large as second.

First movable segment of antenna as broad as long, outer lobe not so long as in *aculeata*.

In the mature male the chelipeds are a fourth longer than the carapace; palms twice as long as wide, margins subparallel; fingers gaping for half their length, a large tooth on dactyl in the gape.

The appendages of the first segment of the male abdomen are so disposed as to form together in their distal half a lyre-shaped figure.

Color.—Whitish (Saussure).

Measurements.—Male (50654), length of carapace 19.4, width of same 17.2 mm. Male (2098), length of carapace 23, width 21.4 mm.

Range.—West coast of Mexico and Central America.

Material examined.—

Magdalena Bay, Lower California: C. R. Orcutt; 1 male, 1 female (50642); 1 male, 2 females (50654). August 14, 1872; U. S. C. S. S. *Hassler;* 1 male (Cat. No. 2098, M. C. Z.).

Off San Francisco (Gulf of California?); 3 males, 1 female (Brit. Mus.).

Northern part, Gulf of California; lat. 29° 30′ N.; long. 112° 40′ W.; 45 fathoms; 1880–1882; Lieut. Comdr. H. E. Nichols, U. S. Navy; 1 young female (15822), holotype of *Othonia nicholsi.*

San Jose Island, Gulf of California; 1921; California Academy of Sciences Expedition; 1 male (Cal. Acad.).

Southern part, Gulf of California; lat. 24° 11′ 30″ N.; long. 109° 55′ 00″ W.; 10 fathoms; Sh.; April 30, 1888; station 2828, *Albatross;* 1 male (21962).

Lower California; M. Diguet; 1 immature female (Paris Mus.). 1911; *Albatross;* 1 male (55751).

Realejo, Nicaragua; Oersted, collector; 1 male (19695); received from Copenhagen Mus.; 1 male, 1 female (Copenhagen Mus.).

PITHO QUINQUEDENTATA Bell

Plate 250, figs. 1–4

Pitho quinquedentata Bell, Proc. Zool. Soc. London, vol. 3, 1835 (1836), p. 172 (type-locality, Galapagos Islands, sandy mud, 6 fathoms; type not extant).—Rathbun, Proc. U. S. Nat. Mus., vol. 38, 1910, p. 573 (part).

Othonia quinque-dentata Bell, Trans. Zool. Soc. London, vol. 2, 1836, p. 57, pl. 12, fig. 2.

Othonia mirabilis Gerstaecker, Arch. f. Naturg., vol. 22, pt. 1, 1856, p. 113 (part).

Othonia quinquedentata A. Milne Edwards, Crust. Rég. Mex., 1875, p. 118, pl. 24, figs. 3–3c.

?Othonia aculeata? Cano, Boll. Soc. Nat. Napoli, ser. 1, vol. 3, 1889, p. 181, pl. 7, fig. 6.

Diagnosis.—First movable segment of antenna narrow. Manus of cheliped broad, compressed. Fourth and fifth lateral teeth much reduced in male, second and third united at base.

Description.—Carapace of male narrow behind. Front rather wide, inner orbital tooth decidedly more advanced than outer tooth, rostral teeth still more advanced and separated by a V interspace. Lateral teeth five, blunt, the last two very small, the last one hardly more than a tubercle; second tooth nearly as large as third, and not entirely separated from it. First movable segment of antennae rather narrow. Chelipeds with manus compressed, upper edge sharp.

The above notes were made in the Paris Museum on a male from the Galapagos Islands. It is probably the specimen figured by A. Milne Edwards (see my figs. 1–3, pl. 250), in which, however, the large, movable segment of the antenna is represented considerably wider than in my drawing (fig. 117, *a*).

In Bell's figure of the type female (see my fig. 4, pl. 250) the carapace is broad behind, the teeth of rostrum and orbit are equally advanced, the outer sides of the orbits diverge anteriorly, the first four lateral teeth are subequal in size and similar, the fifth tooth smaller but not rudimentary. The anterior third of the carapace is smooth, the remaining two-thirds granulated.

While the illustrations of the two authors at first glance seem irreconcilable, it is possible that some of the differences are attributable to exaggeration of sexual characters.

Color.—General color brown; feet with alternate rings of reddish and brown (Bell).

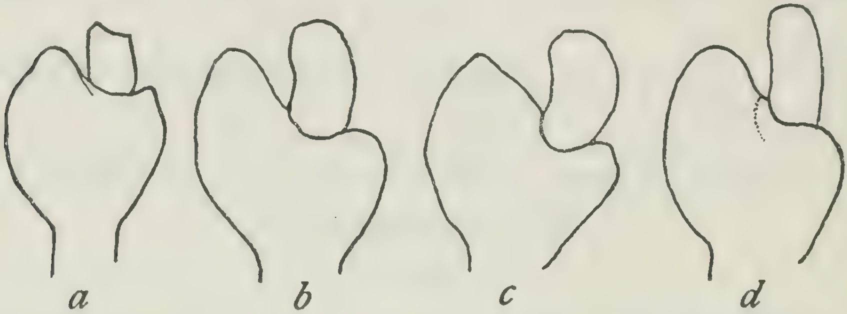

FIG. 117.—PITHO, FIRST AND SECOND MOVABLE ARTICLES OF ANTENNA OF DIFFERENT SPECIES. *a.* QUINQUEDENTATA. *b.* LHERMINIERI. *c.* MIRABILIS. *d.* ANISODON.

Measurements.—Male (Galapagos Islands), length of carapace 16.7, width including spines 16.3, width excluding spines 14, fronto-orbital width 9.7 mm.

Range.—Bay of Panama; Galapagos Islands.

Material examined.—Panama; A. Milne Edwards; 1 young male (Paris Mus.). Galapagos Islands; received from British Museum; 1 male (Paris Mus.).

Other records.—It is possible that the carapace figured by Cano[45] belongs to this species, in which event the long filiform stalks from the antennal region may be considered as foreign growths.

PITHO LHERMINIERI (Schramm)

Plate 128, figs. 1 and 2; plate 129, figs. 1 and 2; plate 252, fig. 2

Othonia quinque-dentata WHITE (not Bell), List Crust. Brit. Mus., 1847, p. 9.

Microrynchus lherminieri DESBONNE (MS.) in Desbonne and Schramm, Crust. Guadeloupe, 1867, p. 20, *nomen nudum.*

Othonia lherminieri SCHRAMM, in Desbonne and Schramm, Crust. Guadeloupe, 1867, p. 20 (type-locality, Guadeloupe in the cavities of the keys; type in Paris Mus.).—A. MILNE EDWARDS, Crust. Rég. Mex., 1875, p. 116, pl. 24, figs. 5–5*c*. Not *O. lherminieri* Rathbun, 1892.

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[45] Boll. Soc. Nat. Napoli, ser. 1, vol. 3, 1889, pl. 7, fig. 6.

Othonia aculeata Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 116 (part).—Kingsley, Proc. Acad. Nat. Sci. Philadelphia, 1879 (1880), p. 388 (part).—A. Milne Edwards, Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 2.

Othonia carolinensis Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 256, pl. 35, figs. 1 and 2 (type-locality, off Charleston, South Carolina; holotype, Cat. No. 3158, U.S.N.M.).

Pitho lherminieri Rathbun, Ann. Inst. Jamaica, vol. 1, 1897, p. 8; Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2, 1901, p. 78.

Pitho aculeata A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 395.

Diagnosis.—First movable segment of antenna narrow. Manus broad, compressed. Fourth and fifth lateral teeth much reduced in females and young males, rudimentary in old males: second and third teeth united at base.

Description.—Carapace rough with tubercles of different sizes, as broad as long in the adult male, longer than broad in other forms, very narrow behind in males, much wider in females. Fronto-orbital width about half the entire width in adults, greater in the young. Frontal teeth slightly more advanced than orbital angles. Second and third lateral teeth subequal; fourth and fifth much reduced. First movable article of antenna similar to that of *P. anisodon*, but wider (fig. 117, *b*).

Chelipeds similar to those of *P. aculeata*. Appendages of abdomen of male in contact at about three-fifths the distance from distal end, then separating slightly in faint curves concave to each other, and again converging before they finally spread out at tips; distal three-fifths yellow, very slender, tapering gradually to a fine point (fig. 116, *a*).

Variation.—In the females and young males, the carapace is more tuberculate than in the old males, the lateral teeth are sharper, the fourth and fifth teeth being more prominent than in the males.

The Cuban male (48733) approaches *P. mirabilis* in having a shorter and broader carapace than in typical *lherminieri;* the usual pattern ot tubercles and coarse granules is set in a background of very fine granules, finer than those of *mirabilis;* the transverse row of transverse tubercles above the posterior margin is almost indistinguishable.

Color.—Dirty brownish yellow (Desbonne).

Measurements.—Male (51003), length of carapace to tips of rostral teeth 15.4, width of carapace 14.6 mm. Female (19357), length of carapace 18.2, width of same 16.5 mm. Male (Paris Mus.), length and width each 25 mm.

Range.—From Beaufort, North Carolina, to São Paulo, Brazil.

Material examined.—See table, pages 364–365.

Material examined of Pitho lherminieri

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
North Carolina:	° ′ ″	° ′ ″			°C						
Fishing grounds southwest of Beaufort.	34 19 00	76 58 00	13.5	Co. S. Sh		1913	7943	*Fish Hawk*	2♂	51003	
Do	34 22 00	76 54 00	15.5	Co		1913	7957	do	1♂	51092	
Do	34 22 30	76 58 00	12.5	Co. Sh		1913	7958	do	1♂ 1♀	51058	
South Carolina:											
Charleston Harbor			1–12			Mar. 20, 1880		R. E. Earll	1♂	3158	Holotype of *Othonia carolinensis* Rathbun.
Blackfish Bank, off Charleston.			12			Mar. 8, 1880		do	1♂	5755	From stomach of fish.
Bahama Banks						May 18, 1893		Biol. Exped. State Univ. Iowa.	1 ovig. ♀ 2♀	20021 Mus.S.U.I.	
Florida:											
Off Key West			(1)			June 26, 1893	46	do	1♂ 1♀	do	
20 miles off Charlotte Harbor.			13			Apr. 19, 1872		*Bache*; William Stimpson.	1 y. ♀	1947, M.C.Z.	
Off Charlotte Harbor	26 33 00	83 10 00	28	sdy	19.1	Apr. 2, 1901	7123	*Fish Hawk*	1♂	25597	
Anclote section	Anclote Light bearing E. 7/8 N., 21½ miles.		12.5	R. Co. S	17.2	Mar. 28, 1901	7106	do	2♂	25596	
Do	28 13 20	83 04 30	6.75	S. brk. Sh	13	Jan. 24, 1902	7244	do	1♀	46714	
Do	28 20 15	83 12 15	10.25	S. Grass	13.5	do	7241	do	1♂	46713	
St. Martins section	28 27 15	83 19 00	10.5	rky. sdy	14	Jan. 15, 1902	7218	do	1♂	46710	
Do	28 34 30	83 15 45	7.5	rky. sdy	13	do	7220	do	1♀	46711	
Do	28 42 30	83 09 45	7	S. brk. Sh. Grass.	12.2	Jan. 17, 1902	7225	do	1 immature ♀	46712	
North Key section	28 47 55	83 16 30	8	rky. grassy	17	Dec. 9, 1901	7211	do	1♂ 2♀	46709	1♀ with Rhizocephalid parasite.
Do	28 50 15	83 23 15	10	R. Co. Sh	17	Nov. 28, 1901	7187	do	1 y. ♀	46706	
Pepperfish Key section	29 19 30	83 46 00	10	S. Co	18.3	Nov. 20, 1901	7158	do	3♀	46705	
Deadmans Bay section	29 24 30	83 49 30	10	R. Co	17	Dec. 6, 1901	7202	do	1♀	46707	
Do			(2)			do		do	1 y. ♀	46708	
Do	29 43 40	83 49 45	5.25	Co	20.5	Nov. 7, 1901	7151	do	1♀	46704	
Do	28 58 50	83 54 20	10	S. Co	22	do	7155	do	1♂	54780	
Mexico: Vera Cruz									3	Geneva Mus	
Cuba:											
Cape San Antonio			(3)			May 25, 1914		Henderson & Bartsch, *Tomas Barrera* Exped.	1♂ 1♀	48679	

Between Cape San Antonio and Cape Cajon.			2-12	Varying from pure sand to weedy.		May 24, 1914	12	do	1y.	48732	
Bahia Honda			2-3	M. Co		June 4, 5, 1914	15	do	1♀	48747	With Rhizocephalid parasite.
Cabañas			2-25	S.Sh.GrasstoM		June 8, 9, 1914	16	do	1♂	48733	
Jamaica								T. H. Morgan	1♀	17205	
Lime Cay								P. W. Jarvis	23 carapaces	19358	
Port Royal								do	Specimens	Returned to sender.	
Jamaica								do	1 carapace	19357	
Porto Rico:											
Mayaguez Harbor	Pt. del Algarrobo, E. by N. ½ N., 5¾ miles.		97-120	Co	21	Jan. 20, 1899	6067	*Fish Hawk*	1♂	24107	
Off Vieques Island	Pt. Mula Lighthouse, S.SW. ⅜ W., 5¾ miles.		14	Co. S. Sh	25.6	Feb. 8, 1899	6085	do	1♂	24106	
Lesser Antilles:											
St. Thomas								A. Milne Edwards.	3♂ 2♀	Paris Mus	
					°*F*						
Off St. Croix	17 46 10	64 53 15	38	S. blk. Sp. Sh.	76.75	Jan. 4, 1879	127	*Blake*	1 sm. ♂	2581, M.C.Z.	
Guadeloupe								A. Milne Edwards.	1♂	Paris Mus	Type.
Martinique								Latreille collection.	1♀	do	
West Indies									3 sm. ♂	Brit. Mus	*O. quinquedentata* of White.
Caribbean Sea:											
Old Providence Island						1884		*Albatross*	1 ovig. ♀	9133	
Great Bay, Wacao, Curaçao.			½	Algae		Oct. 3, 1905		J. Boeke	1♂	Leiden Mus.	
Brazil:	*Lat. S.*										
Off Cape St. Roque	6 59 30	34 47 00	20	brk. Sh.	79	Dec. 16, 1887	2758	*Albatross*	1♂ 1 ovig. ♀ 1♀	21963 18615	Of small size; females have much slenderer lateral spines than customary.
Islet of São Sebastião, São Paulo.						1915			1	937, Mus. Paulista.	Fragmentary.

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[1] Shallow water.

[2] Between 3 and 10 fathoms.

[3] Dredged.

PITHO MIRABILIS (Herbst)

Plate 128, fig. 3; plate 129, fig. 3; plate 253, fig. 1

Cancer mirabilis Herbst, Naturg. d. Krabben u. Krebse, vol. 2, 1794, p. 152 (part), pl. 37, fig. 3 (type-locality not known; types in Berlin Mus.).

Othonia mirabilis Gerstaecker, Arch. f. Naturg., vol. 22, pt. 1, 1856, p. 113 (part).

Othonia sexdentata A. Milne Edwards, Crust. Rég. Mex., 1875, p. 117 (part).

Othonia rotunda Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 258, pl. 36, fig. 1 (type-locality, Key West, Florida; holotype, Cat. No. 15807, U.S.N.M.).

Pitho mirabilis Rathbun, Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 258.

Diagnosis.—Carapace swollen, as broad as long, covered with fine bead granules. Lateral teeth diminishing in size from the anterior to the posterior, their edges denticulate.

Description.—Carapace as broad as long, widest at fourth antero-lateral tooth, much swollen in both directions, transversely rising abruptly from bases of lateral teeth, longitudinally rising in almost an equal curve from behind the front and from posterior margin. Regions faintly indicated. Carapace covered with granules more thickly set on posterior half; long, fine hairs proceed from the top of the granules. Along the outer margins of the gastric lobes, bunches of granules beset with coarse hairs form a broad line which is continued to rostrum. Rostral teeth sharp, produced beyond orbital angles. Preorbital tooth obtuse, less produced than post-orbital, which is subacute. Antero-lateral teeth usually five, acute, separated to their bases, the first the largest, the others as a rule decreasing in size to the last, the tips making a single curve. Anterior margins of teeth thickened. Antero-lateral margin marked by inconspicuous granules irregularly placed, giving the teeth the appearance of being themselves minutely dentate. Basal article of the antenna with a sharp, longitudinal groove through the middle; tooth at distal extremity slightly more produced than upper inner angle of orbit and visible in a dorsal view; outer lobe of first movable article directed forward (fig. 117, *c*). Abdomen and sternum minutely pubescent; abdominal appendages in male diverging slightly at distal ends hooked at tips (fig. 116, *d*).

Chelipeds in both sexes slender, longer than ambulatory legs, finely punctate, upper margin with thinly scattered hairs; arm angular, a few small tubercles on the upper margin; hand slightly tapering distally; fingers in male gaping for the proximal third, a tooth on dactyl; in the female, fingers evenly dentate and in contact for nearly their whole length, a slight gape at proximal end.

Ambulatory legs very hairy above, first pair reaching to about middle of manus.

Measurements.—Female (15807), length and width of carapace each 17.8; width between outer orbital angles 9.4 mm. Carapace of larger type (Berlin Mus.), sex unknown, length 18.7, width 19, width exclusive of teeth 17 mm.

Range. —Bahama Banks and Florida Keys to Guadeloupe.

Material examined.—

Bahama Banks; May 15–18, 1893; Biol. Exped. State Univ. Iowa; 1 male, 5 females (Mus. S. U. I.), 2 females (18674).

Hawk Channel, Florida; 1903; *Fish Hawk:* 3⅛ miles N. ¾ E. of Sombrero Light; 11½ feet; rky.; Jan. 27; station 7427; 1 male (47072). 1¼ miles S. by W. of southeast end of Long Key; 15 feet; barry; February 18; station 7463; 1 male (47073).

Key West, Florida: 1884; *Albatross;* 1 female (16298). 1885; H. Hemphill; 5 males, 5 females (1 male is holotype of *Othonia rotunda*) (15807).

Porto Rico; 1899; *Fish Hawk:* Porto Real; February 27; 1 male (24105). Exact locality not given; 1 female (24104).

Guadeloupe; 1 male (Geneva Mus.).

Locality unknown; 2 carapaces, cotypes of *Cancer mirabilis* (Berlin Mus.).

PITHO SEXDENTATA Bell

Plate 130, fig. 1; plate 250, figs. 5–9

Pitho sexdentata BELL, Proc. Zool. Soc. London, vol. 3, 1835 (1836), p. 172 (type-locality, Galapagos Islands, 6 fathoms, sandy mud; type not extant).

Othonia sexdentata BELL, Trans. Zool. Soc. London, vol. 2, 1836, p. 56, pl. 12, figs. 1–1*d*.

Othonia mirabilis GERSTAECKER, Arch. f. Naturg., vol. 22, pt. 1, 1856, p. 113 (part).—CANO, Boll. Soc. Nat. Napoli, ser. 1, vol. 3, 1889, pp. 102, 182.

Othonia sexdentata STIMPSON, Ann. Lyc. Nat. Hist. N. Y., vol. 7, 1860, p. 192.—A. MILNE EDWARDS, Crust. Rég. Mex., 1875, p. 117 (part).

Diagnosis.—Carapace oval, narrow across front. Six lateral teeth behind orbital tooth, teeth separated to their bases. Granulation dense.

Description.—Carapace broadly oval, moderately elevated, the surface rough, granulated and slightly hairy; the lateral margin with six, flattened, triangular, falciform teeth, the points acute and directed forward; a ridge of prominent granulations over the posterior margin. (Bell.)

Notes made at Paris Museum on male from Cape St. Lucas.—Fronto-orbital distance narrow, much as in *P. anisodon*. Rostral teeth very narrow and sharp or spiniform. Lateral teeth of carapace divided to their bases, acute, margins granulate; the sixth or posterior tooth is postero-lateral, separated from the fifth tooth by a tubercle, and situated above the margin, forming an arcuate line with the other teeth but above their level. Granules and tubercles of carapace more numerous than in *P. quinquedentata;* there are about 50 small granules on the cardiac region and 40 on the mesogastric region; the granules of the postbranchial region are large and spinous. One or more hairs curved at tip arise from each tubercle or granule. An uninterrupted row of large transverse tubercles above margin. Orbital teeth acute, the outer one advanced nearly as far as the inner. First movable article of the antenna shaped much as in *P. quinquedentata.* Chelipeds weak; manus compressed, margins tapering toward extremity.

Measurements.—Male, Cape St. Lucas (Paris Mus.), length of carapace 14.2, width 13.8, width exclusive of spines 12, width between outer orbital angles 7 mm. Female, Cape St. Lucas (M. C. Z.), length of carapace 16.3, width 15.8, width exclusive of spines 13.7, width between outer orbital angles 7.4 mm. Female (Bell), length 9 lines (22.8 mm.), width 8 lines (20.3 mm.).

Range.—Cape St. Lucas, Lower California, Mexico; Galapagos Islands.

Material examined.—

Cape St. Lucas; John Xantus; 1 male, 1 female (55116), 12 males, 9 females (1225, M. C. Z.), 1 immature female (British Mus.).

Cape St. Lucas; A. Milne Edwards; 1 male (Paris Mus.).

Galapagos Islands; one specimen (Paris Mus.).

Remarks.—In this species there is in some individuals a tendency to a slight union of the second and third teeth at their base.

PITHO ANISODON (von Martens)

Plate 131; plate 251, fig. 2

Othonia anisodon VON MARTENS, Arch. f. Naturg., vol. 38, pt. 1, 1872, p. 83, pl. 4, fig. 3 (type-locality, Cuba; cotypes in Berlin Mus.).

Othonia aculeata KINGSLEY, Proc. Acad. Nat. Sci. Philadelphia, 1879 (1880), p. 388 (part).

Othonia lherminieri RATHBUN (not Schramm), Proc. U. S. Nat. Mus., vol. 15, 1892, p. 255, pl. 34, figs. 3 and 4 (not all synonymy).

Pitho anisodon RATHBUN, Ann. Inst. Jamaica, vol. 1, 1897, p. 8; Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 258; Bull. U. S. Fish. Comm., vol. 20, for 1900, pt. 2 (1901), p. 77.

Diagnosis.—Lateral teeth of carapace five, acute; second tooth much reduced and united at base with third tooth. Fronto-orbital distance short. Palms of old male long and narrow. Distal third of male appendages lyre-shaped. Lobe of first movable segment of antenna small, forward-pointing.

Description.—Carapace oval, with the anterior margin narrow. Width between outer angles of orbits but little more than half the greatest width of the carapace. Rostral teeth more advanced than orbits, horizontal, separated by a V-shaped interspace. Orbital angles acute, outer margin of outer tooth oblique and sinuous. Lateral teeth five, acute, curved, the second and fifth reduced, the second united at base with the third. Carapace nearly smooth; almost the only granules are near the last lateral tooth and in the row above the posterior margin. First movable segment of antenna with a short outer lobe which is directed forward (fig. 117, *d*).

The chelipeds of old males are from 1½ times to nearly twice as long as carapace; palms from twice to three times as long as wide; arm subcylindrical and nearly smooth; wrist with a longitudinal ridge, otherwise smooth.

Appendages of first segment of male abdomen with the distal third of a light brown color, gradually tapering and arranged in the form of a lyre, widely spreading at tips (fig. 116, *b*).

Measurements.—Male (15093), length of carapace to tips of rostral teeth 30.5, width of carapace including spines 28.8, excluding spines 25, fronto-orbital width 16.2 mm. Female (14077), length of carapace 29.2, width of carapace including spines 27, excluding spines 24.2, fronto-orbital width 14.5 mm.

Variations.—The spines of the carapace, rostral, orbital and lateral, may be more slender and elongate than usual, as in a small female (46721). The second lateral spine, commonly of small size, may be suppressed on one side while normal on the other (22269, 33152, 39471), or it may occur in the sinus between the second and fourth spines (male, 33151), instead of between the first and third.

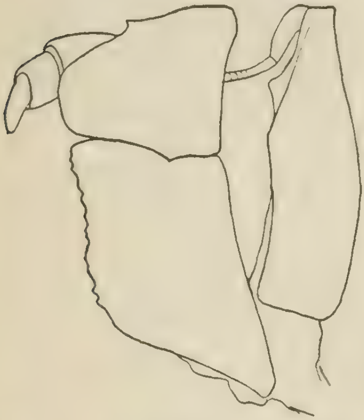
FIG. 118.—PITHO ANISODON (6424), MAXILLIPED, × 8.58

Range.—Bahamas and Florida Keys to Guadeloupe and Curaçao.

Material examined.—See table, page 370.

PITHO QUADRIDENTATA (Miers)

Plate 132, fig. 2; plate 133, fig. 2; plate 250, fig. 10

Othonia quadridentata MIERS, Ann. Mag. Nat. Hist., ser. 5, vol. 4, 1879, p. 15, pl. 5, fig. 1 (type-locality, West Indies; types in Brit. Mus.).

Othonia lherminieri BENEDICT (not Schramm), Johns Hopkins Univ. Cir., vol. 11, No. 97, April, 1892, p. 77.—RATHBUN, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 255 (part).

Pitho quadridentata RATHBUN, Ann. Inst. Jamaica, vol. 1, 1897, p. 9.

Diagnosis.—Four lateral spines, large, acute, pointing well outward. Teeth of front and orbits blunt. Distal third of male appendages lyre-shaped.

Material examined of Pitho anisodon

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°C						
Bahamas: Off Governors Harbor, Eleuthera Island.			5			July 7, 1903		B. A. Bean, Geogr. Soc. Baltimore.	2♂ 2♀	31067	In oyster dredge. A female with carapace 8.7 mm. long is carrying eggs .5 in diameter.
Florida:											
Cape Florida						Oct. 29, 1896		B. W. Evermann.	1♂ 1♀	22252	
Broad Creek						Nov. 24, 1906		B. A. Bean	1 sm. ♂	33144	Soft shell.
Do						Dec. 1, 1908		do	1♂	39471	
Broad Creek; ocean front.						Dec. 17, 1906		Pine and Bean	2♂	33151	
Cards Sound	1½ miles N. of Pumpkin Key.		*Feet* 10	barry		Mar. 10, 1903	7493	*Fish Hawk*	1♀	46769	With Rhizocephalid parasite.
Key Largo								H. Hemphill	5♀	15090	
Grecian Shoals, Hawk Channel.	4¼ miles W. by N. of Elbow Reef Beacon.		16.5	barry, S		Feb. 19, 1903	7467	*Fish Hawk*	3 y. ♀	46768	
Do	¼ mile SW. by S. of Basin Hill Beacon.		12	S. Grass		do	7469	do	1 y. ♀	46721	With unusually slender spines.
Lower Metacumbe Key			(1)	G				H. Hemphill	7♂ 12♀	14085	
Do						Dec. 4, 1906		Pine, Vandegrift & Bean.	1♂	33126	
Conch Key?						Jan. 28, 1903		A "jacky" on *Fish Hawk*.	1♂	46715	
No Name Key								H. Hemphill	11♂ 7♀ 4y	14077	
North of Knights Key Channel.	2¾ miles N. of Basin Bank.		10.5	rky		Jan. 22, 1903	7416	*Fish Hawk*	1♀	46767	
Summerland Keys						Dec. 6, 1906		B. A. Bean	2♀	33152	
Off Key West	Inside the reef, Key West Light to E. Channel Bar Buoy, 71° 53′, to Beacon "A", 74° 46′.		5.25	C. S. Grass	20	Feb. 13, 1902	7278	*Fish Hawk*	1 y. ♀	46719	
Key West								D. S. Jordan, U. S. Fish Comm.	3♂ 2♀	15093	
Do						1885		H. Hemphill	6♂ 3♀	9286	

Off Key West	About 1 mile from Light.		5.25			June 26, 1893	44	Biol. Exped. State Univ. Iowa.	1 ♀	Mus. S. U. I.	
2 miles west of Key West.						Oct. 19, 1896		B. W. Evermann, U. S. Fish Comm.	1 ♂	22269	
Boca Grande						Apr. 27, 1915		E. Danglade, Bur. Fisheries.	1 ♀	56220	
Off Cape Sable	N. by W. ½ W., 7¼ miles from signal.		2	gy. S. Grass		Dec. 19, 1902	7368	*Fish Hawk*	1 y. ♂ 1 y. ♀	46720	
Florida Bay	25 03 30	81 12 10	2.75			Dec. 18, 1902	7366	do	1 ♀	46766	
Do	7 miles N. W. ½ W. of Bamboo Key.		*Feet* 10.5	rky		Jan. 23, 1903	7424	do	1 ♂	54458	
Sarasota Bay								H. Hemphill	60 5 y	6424 6431	
Off northwest end St. Martins Reef, Florida Banks.	Near 28 50 00	Near 83 00 00						Lieut. J. F. Moser, U.S.N., U. S. C. S. S. *Bache.*	1 ♀	15097	
			Faths.								
North Key section	29 00 00	83 18 45	5.75	rky. Co	15.3	Nov. 28, 1901	7182	*Fish Hawk*	1 y. ♀	46718	
Pepperfish Key section	29 15 30	83 27 30	5.5	sdy	16.2	Nov. 21, 1901	7166	do	1 ♂ 3 y	46764	
Do	29 23 00	83 27 05	3.5	S. G	16.3	do	7159	do	1 ♂	46763	
Do	29 26 15	83 37 30	6.75	S	17.3	Nov. 20, 1901	7156	do	1 y. ♂	46717	
Aucilla section	29 45 48	83 57 30	7	S. Co	21	Nov. 6, 1901	7149	do	1 y	46716	
West coast of Florida								J. W. Velie	1 ♀	25184	
Cuba									3	Berlin Mus.	Cotypes.
Bahia Honda			2–12	M. Co		June 4, 5, 1914	15	Henderson & Bartsch, *Tomas Barrera* Exped.	2 ♀	48737	
Santa Lucia Bay	Along main shore and bayous opposite anchorage.					May 15, 1914		do	1 ♂	48736	
Jamaica						1884		*Albatross*	2 ♀	16188	
Porto Rico: Culebra Island						Feb. 11, 1899		*Fish Hawk*	1 ♂ 1 ♀	24086	
Guadeloupe									1	Geneva Mus.	
Curaçao: Rifwater			(2)	Algae		May 26, 1905		J. Boeke	1 ♀ immature	Leiden Mus.	In beam trawl.

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[1] Below low tide.

[2] Shallow water.

Description.—Allied to *P. anisodon*, but the second or smallest of the lateral spines is suppressed, leaving four spines, which are narrower, less flattened and more outstanding than in *anisodon.* All four spines are of large size, second and third largest, fourth as long as first and more slender; between first and second spines a tubercle may be present on one or both sides, corresponding to the small spine or tooth similarly placed in *P. anisodon.* Carapace wider than in *anisodon*, owing to the widespread spines, the width being greater than the length in the largest specimens, while in *P. anisodon* the width is much less than the length.

Teeth of rostrum short, blunt or subacute, separated by a wide V. Orbital teeth also blunt.

The fourth abdominal segment of the male is longer and narrower than in *anisodon.*

Measurements of carapace of cotypes.—Female, length 20.7, width 20.3, width without spines 17.4, fronto-orbital width 11 mm. Sex unknown, length 27, width 28.7, width without spines 24, fronto-orbital width 14.8 mm.

Measurements of carapaces of Pitho quadridentata and anisodon of approximate size

Females	Length	Width	Width without spines	Fronto-orbital width
Pitho quadridentata	22.8	23.2	19.5	11.9
Pitho anisodon	22.6	20.7	19	11

Range.—Jamaica.

Material examined.—

Port Royal, Jamaica; P. W. Jarvis; 3 males, 2 females (19404).

Kingston Harbor, Jamaica; T. H. Morgan; 1 male (17204). 1896; F. S. Conant; 1 male (19585).

West Indies; 2 large females and 2 very large carapaces (cotypes, Brit. Mus.).

PITHO LAEVIGATA (A. Milne Edwards)

Plate 132, figs. 3 and 4; plate 133, fig. 3; plate 250, figs. 11–13

Cancer mirabilis HERBST, Naturg. d. Krabben u. Krebse, vol. 2, 1794, p. 152 (part), not pl. 37, fig. 3.

Othonia laevigata A. MILNE EDWARDS, Crust. Rég. Mex., 1875, p. 116; 1878, pl. 24, figs. 2–2*b* (type-locality, Antilles; holotype in Paris Mus.).

Diagnosis.—Five lateral teeth subequal; second and third united at base. Front narrow. Outer margin of lobe of first movable joint of antenna very arcuate.

Description.—Carapace subcircular, broader than long, the outer margins of the outer orbital teeth converging anteriorly, the fronto-orbital distance narrow, less than half the width of the carapace. Five large, lateral teeth, flat and broad, except for the sharp tips which are curved forward and a little inward; the third and fourth teeth are the largest, the first and second nearly as large, the second and third slightly united at the base; last sinus widest. Orbital teeth blunt or nearly so. Rostral teeth subacute, interspace triangular, a little narrower than either tooth. The branchial and intestinal regions are covered with flattened granules, but sometimes appear almost smooth; the remainder of the carapace is covered with punctae or scalelike granules, from which proceed hairs. Gastro-branchial groove deep.

The lobe of the first movable segment of the antenna points forward, its outer margin is strongly curved.

Measurements.—Female (53051), entire length of carapace 33, entire width 34, width exclusive of spines 30, fronto-orbital width 15 mm. Male (type), entire length of carapace 34.8, entire width 40.8, width exclusive of spines 33, fronto-orbital width 16.2, length of merus of cheliped 21.5, width of same at middle 4.6 mm.

Range.—West coast of Florida southward to north coast of South America.

Material examined.—

St. Martins section, Florida; lat. 28° 34′ 45″ N.; long. 83° 08′ 00″ W.; 5¾ fathoms; Co. R. Grass; temp. 12.5° C.; January 15, 1902; station 7221, *Fish Hawk;* 1 female, variety (46765).

Antilles; 1 male, holotype (Paris Mus.).

Sabanilla, Colombia; 1884; *Albatross;* 1 immature female (15820).

Chaguamdus Bay, Trinidad; W. O. Crosby; received from Boston Soc. Nat. Hist.; 2 ovigerous females (53051).

Locality not known; 1 carapace, cotype of *Cancer mirabilis* (Herbst), (Berlin Mus.).

Variations.—In the old females the posterior of the lateral teeth is in advance of the line of the gastro-cardiac suture. In the young female (15820), the line of that suture if prolonged would cross the posterior teeth; in this little specimen also the first and third teeth are subequal and larger than the others.

Most interesting is the female from the west coast of Florida (46765) which appears to represent a variety of *P. laevigata.* It differs from the typical form as follows: The second lateral tooth is much smaller than any of the others; it is slender, nearly straight, and as in typical *laevigata*, slightly united to the third tooth. The distance between the tips of the first and third teeth is less than between the third and fourth. The tips of the orbital teeth are more acute and are a little curved.

PITHO DISPAR, new species

Plate 132, fig. 1; plate 133, fig. 1

?Othonia quinquedentata Aurivillius (not Bell), K. Svenska Vetensk.-Akad. Handl., vol. 23, 1889, p. 56, pl. 3, fig. 9 (Wreck Bay, St. Thomas).

Pitho anisodon Rathbun, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 77 (part: specimen from Culebra).

Type-locality.—Ensenada Honda, Culebra Island, Porto Rico; 1 ovigerous female, holotype. (Cat. No. 24205, U.S.N.M.)

Diagnosis.—Four lateral teeth. Rostral lobes rounded, not pointed. Orbital lobes not produced. Lobe of first movable segment of antenna small.

Description.—Carapace longer than wide, oblong-oval and hairy; branchial regions sparingly granulate; lateral teeth four, of rather small size, the first or anterior tooth low, its sides at right angles to each other, end rounded; three remaining teeth broad, curved, with a short, sharp point, the second tooth widest, the third most outstanding; in the interval between the first and second teeth of the left side there is a small tubercle. Rostrum divided into two short, rounded lobes or teeth. Orbital angles not produced, inconspicuous, anterior margin of preorbital lobe and of basal antennal segment transverse, not oblique as in other species; postorbital lobes with outer margins converging anteriorly, terminal angle a right angle. First movable segment of antenna narrow, a little longer than wide, outer lobe short, directed forward.

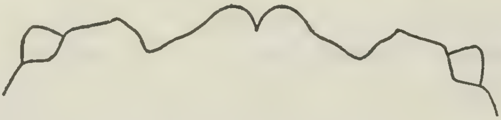

Fig. 119.—Pitho dispar, female (24205), outline of front and orbits, from below, × 6.

Variation.—Only two specimens of the species have been observed. The second one is also female, but immature and smaller than the holotype, and differs from it as follows: The branchial granulation is scarcely visible; the second lateral teeth lack a sharp tip, and may perhaps be broken off; there is no trace of a tubercle between first two teeth; the rostral lobes, though very short, are very obtuse-angled; the anterior margin of the pre-orbital lobe is slightly oblique; the outer margins of the postorbital lobes are subparallel.

Measurements.—Female, holotype, entire length of carapace 17.3, entire width 15.7, width without lateral teeth 14.6, fronto-orbital width 8.6 mm.

Range.—St. Thomas; Porto Rico.

Material examined.—

St. Thomas; 1884; *Albatross;* 1 young female (16189).

Ensenada Honda, Culebra Island, Porto Rico; February 10, 1899; *Fish Hawk;* 1 female, holotype (24205).

Remarks.—The specimen from Wreck Bay, St. Thomas, figured by Aurivillius has only four lateral teeth, but the first one is represented as similar to, and larger than, the two succeeding teeth. This throws doubt on the identity of his species and ours.

Genus LEPTOPISA Stimpson

Leptopisa Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 114; type, *L. setirostris* (Stimpson).—Rathbun, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 75.

Leptopisa (subgenus of *Tiarinia*), A. Milne Edwards, Crust. Rég. Mex., 1875, p. 63.

Carapace narrow, oblong, tuberculated, with an epibranchial spine, but no lateral series of spines. Orbits complete, short, tubular. Spines of rostrum long and slender. Basal joint of antenna enlarged, armed with spines distally; movable part of antennae very slender and partly hidden by rostrum. Buccal cavity very wide; merus of outer maxillipeds strongly dilated laterally, wider than ischium and notched at inner angle. Chelipeds slender, elongate. Ambulatory legs decreasing regularly in length, the first pair very long, last pair very short.

Closely allied to *Macrocoeloma*, from which it differs chiefly in its narrow carapace, long horns, and short orbital tubes.

Contains only the type species.

LEPTOPISA SETIROSTRIS (Stimpson)

Plate 134, figs. 1–3; plate 253, fig. 2

Tiarinia setirostris Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 114 (type-localities, Key West, 2 to 5 fathoms; near the Tortugas, 9 fathoms; on the Fishing Banks, SW. of Loggerhead Key; types destroyed in the Chicago fire).

Leptopisa setirostris Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 114, in text.—Rathbun, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2, 1901, p. 75.

Leptopisa (subgenus of *Tiarinia*) *setirostris* A. Milne Edwards, Crust. Rég. Mex., 1875, p. 64.

Macrocœloma tenuirostra Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 252, pl. 33, fig. 1 (type-locality, between Jamaica and Haiti, 23 fathoms, station 2138, *Albatross;* type, Cat. No. 6929, U.S.N.M.).

Diagnosis.—Sides of carapace perpendicular; dorsum tuberculate. Rostral horns long, slender, contiguous.

Description.—Carapace covered with a short pubescence, and numerous depressed tubercles; cardiac region with a prominent tubercle; mesogastric region with one less high; intestinal region with two short median spines; a short, sharp spine at postero-lateral angle of branchial region; lateral margins nearly straight, tuberculate;

Material examined of Leptopisa setirostris

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°*C*						
Florida: Off Miami			30					J. B. Henderson	1♂ 2 ovig. ♀	47065	
Cuba:											
Dimas Bay				Mud and plants.		May 17, 1914	5	Henderson & Bartsch, *Tomas Barrera* Exped.	1	47922	
Ensenada de Santa Rosa.			1-3	S. Sh. Sponge		May 19, 1914	7	do	1♂ 1♀ 2♀ (1 ovig.)	48658 48667	
On reef flat between Cayo Hutia and Little Cayo, northeast of light.								do	1 ovig. ♀	48760	
Jamaica: Between Jamaica and Haiti.	17 44 05	75 39 00	23	Co. brk. Sh		Feb. 29, 1884	2138	*Albatross*	1♂	6929	Holotype of *M. tenuirostra.*
Porto Rico:											
Off Humacao	Humacao, N. ½ W., 3 miles.		12.5	Co	26.4	Feb. 14, 1899	6098	*Fish Hawk*	1♀	24191	
Off Vieques Island	Culebrita lighthouse, NE. by N., 10 miles.		15	Co	26	Feb. 10, 1899	6091	do	1♂	24189	
Do	Culebrita lighthouse, NE. ⅜E., 7¼ miles.		16	Co	25.2	do	6092	do	1♀	24187	
Off Culebra Island	Point Mula lighthouse, SW. ¼ S., 10½ miles.		15.25	Co. S	25	Feb. 8, 1899	6087	do	1♂ 1♀	24192	
Do	Culebrita lighthouse, NE., 5¼ miles.		15	Co	25.2	Feb. 10, 1899	6093	do	1♂	24188	
St. Thomas:											
Off St. Thomas	Sail Rock, W. by N. ½ N., 6 miles.		20-23	Co	25.8	Feb. 6, 1899	6079	do	1♀ 1 y	24193	
Do	Sail Rock, NW. ½ W., 4 miles.		20	Co	25	do	6080	do	1 y	24190	
St. Thomas						Jan., 1884		*Albatross*	1 y	18562	
West Indies									1 ovig. ♀	Copenhagen Mus.	
Brazil:	*Lat. S.*				°*F*						
Off Cape St. Roque	6 59 30	34 47 00	20	brk. Sh	79	Dec. 16, 1887	2758	*Albatross*	3♂	21929	
Northeast of Bahia	11 49 00	37 20 00	40			Jan. 18, 1872	11	*Hassler*	1♂ 1 ovig. ♀	1922, M. C. Z	

sides perpendicular. Orbit with a short preocular and postocular spine and an inferior tubercle on margin of antennal joint. Rostral horns about half as long as rest of carapace, slender, tapering, granulate, slightly convex to each other, leaving a narrow interspace at base and toward extremity, otherwise contiguous. Basal antennal joint with two short distal spines—one at insertion of second joint, the other terminating a longitudinal ridge and just visible beside rostrum in a dorsal view; flagellum filiform. Chelipeds tuberculate; palm slightly compressed, about two and one-half times as long as wide in adult male; fingers gaping in male, the dactylus with a broad basal tooth. Ambulatory legs pubescent.

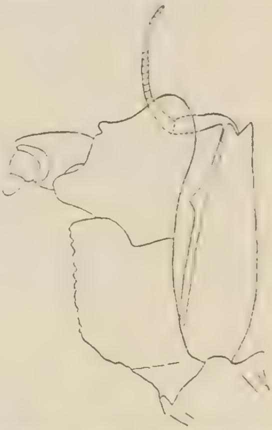

Fig. 120.—Leptopisa setirostris (48658), maxilliped, × 9.16

Measurements.—Male (47065), entire length of carapace 22.5, length of rostral horns 7.2, branchial width inclusive of spines 9.7, exclusive of spines 9.3, width between tips of preocular spines 6.3 mm.

Range.—Florida Keys, from Miami southward; West Indies; northern Brazil. Depth, 1 to 40 fathoms.

Material examined.—See table, page 376.

Genus ANAPTYCHUS Stimpson

Anaptychus Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 183 [55]; type, *A. cornutus* Stimpson.

Ala Lockington, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 65 [3]; type, *A. spinosa* Lockington.

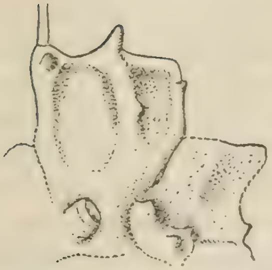

Fig 121.—Leptopisa setirostris, female (48667), basal article of antenna with postorbital lobe, × 9

Carapace triangular, broader than long; lateral and antero-lateral margins laminiform, expanded above the bases of the legs and coarsely dentate; sides below the laminae perpendicular. Orbits complete, small and deep, but not tubular. Eyes retractile, capable of concealment. Rostrum and external antennae resembling those of *Microphrys.* Rostrum short, bifid. Spine of basal article of external antennae long, acute, much like the rostral horn; movable part exposed. Preorbital spine prominent, acute; outer orbital angle dentiform, minute; superior orbital fissures closed, inconspicuous. Merus of endognath of external maxillipeds broader than long, external angle abruptly prominent, inner angle sinuous at the insertion of the palp; exognath wide, armed on the inner side with a strong, exposed tooth.

ANAPTYCHUS CORNUTUS Stimpson

Plate 134, figs. 4 and 5; plate 254, fig. 1

Anaptychus cornutus Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 184 [56], pl. 2, figs. 1, 1*a*, 1*b* (type-locality, Pinacate Bay, near Guaymas, Gulf of California; type, male, not extant).—A. Milne Edwards, Crust. Rég. Mex., 1875, p. 67, pl. 19, figs. 1–1*b*.—Kingsley, Proc. Boston Soc. Nat. Hist., vol. 20, 1879, p. 146.

Ala spinosa Lockington, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 66 [4] (type-localities, La Paz, San José Island and Port Escondido, all in Gulf of California; types not extant).

Mitrax trigonopus Cano, Boll. Soc. Nat. Napoli, ser. 1, vol. 3, 1889, p. 183, pl. 7, fig. 8 (type-locality, Panama; type in Naples Mus.?).

Mithrax trigonopus Rathbun, Proc. U. S. Nat. Mus., vol. 38, 1910, p. 575.

Diagnosis.—Carapace broader than long. Antero-lateral margin a thin, tridentate crest. Rostral and antennal spines similar and subequal. Chelipeds and legs cristate.

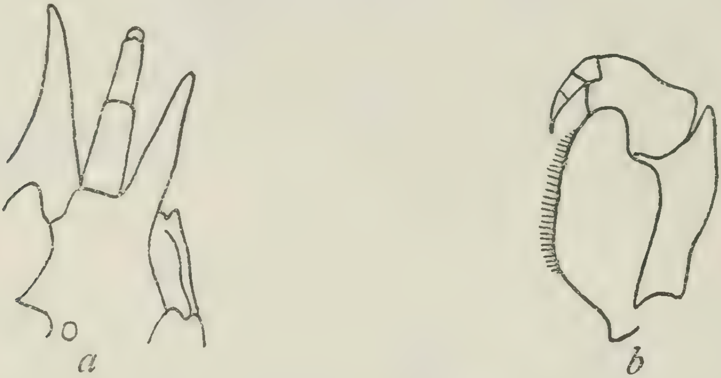

Fig. 122.—Anaptychus cornutus, male, type. *a*. Antennal region, ventral view. *b*. Maxilliped. (After Stimpson.)

Description.—Carapace covered with minute tufts of very short setae. Upper surface nearly level, but the gastric, cardiac and inner part of branchial region slightly protuberant; nine or ten low tubercles on the gastric region. Antero-lateral margin with three large triangular sublaminiform teeth behind the orbit, separated from each other by regularly curved sinuses. Posterior margin with a crest interrupted on each side; the middle portion being arcuated, six-lobed and fringed with pencils of stout, longish setae. Rostrum from one-fourth to one-fifth as long as remainder of carapace, and cleft nearly to its base; horns acute.

Chelipeds a little longer than the first pair of ambulatory legs, but scarcely thicker; merus with five or six blunt, somewhat laminiform spines; outer surface of carpus with a laminiform, longitudinal crest through the middle and tubercles on each side; hand unarmed, minutely granulate; fingers narrowly gaping, crenulate within, tips not spoon-shaped within. Inferior surface covered with short, stout setae, and some rows of long, stout setae on sternum and legs. Legs with merus and carpus bicristate above, propodus unicristate, crests divided into a few large lobes or teeth. These, as well as the lobes of the chelipeds are each tipped with a cluster of setae.

Measurements.—Male (46076), total length of carapace 16.8, width 18.3, length of horns 1.8 mm. Male, holotype, length 25.4, width 31.4 mm. (Stimpson). Female (Tepoca Bay), total length of carapace 27.3, width 32.8 mm.

Range.—Gulf of California to Panama.

Material examined.—

Lower California; M. Diguet; 2 immature females (Paris Mus.).

Tepoca Bay, Sonora, Mexico; April 15, 1921; Fred Baker, Cal. Acad. Exped.; 2 females (Cal. Acad.).

Pinacate Bay, Guaymas, Sonora, Mexico; Capt. C. M. P. Stone; 1 ovigerous female, paratype (331, M. C. Z.); described and figured by A. Milne Edwards.

Manzanillo, State of Colima, Mexico; on drifted pile; July 17, 1913; C. R. Orcutt; 1 male (46076).

Pearl Islands, Bay of Panama, Panama; S. W. Garman; 1 male (2039, M. C. Z.).

Remarks.—As Kingsley[16] has remarked, of one of Lockington's cotypes, the first lobe of the antero-lateral margin is narrower and more slender than figured by Stimpson, his type being a larger specimen.

Genus MITHRAX Latreille

Mithrax LATREILLE, Règne Anim. de Cuvier, vol. 3, 1817, p. 23; type, *M. hispidus* (Herbst).

Trachonites LATREILLE, in Desmarest, Dict. Sci. Nat., vol. 28, 1823, p. 263; type, *M. hispidus* (Herbst).

Mithraculus WHITE, List Crust. Brit. Mus., 1847, p. 7; type, *M. coronatus* White (part)=*M. sculptus* (Lamarck).

Nemausa A. MILNE EDWARDS, Crust. Rég. Mex., 1875, p. 80; type, *N. spinipes* (Bell).

Carapace ovate or oblong-ovate, either broader than long or slightly longer than broad. Antero-lateral margin bearing usually four, sometimes three, spines or lobes behind the orbit; postero-lateral margin sometimes having a spine or tubercle. The front has two small rostral horns, either pointed or truncate, sometimes very short, and beside them are other spines or prominences, either preorbital or antennal. Orbital borders more or less spinous or tuberculous. Antenna short; basal article wide, armed in front with two or three spines or lobes; second article inserted outside the orbit, at base of rostrum. Merus of outer maxillipeds wide and dilated outwardly; exognath wide. Sternal plastron almost circular.

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[16] Proc. Boston Soc. Nat. Hist., vol. 20, 1879, p. 146.

Chelipeds long and strong, especially in male; fingers deeply hollowed out at tip, gaping considerably when shut. Legs robust, armed with spines and terminated by hooked dactyls which are often armed with spines on lower surface. Abdomen of male formed of seven free segments.

Restricted to America and the Bermudas.

KEY TO THE SPECIES OF THE GENUS MITHRAX

A¹. Carapace without smooth, oblique, branchial sulci_Subgenus **Mithrax**, p. 383.
  B¹. Manus armed above with spines or spinules.
    C¹. Two spines only on basal segment of antenna_____**spinosissimus**, p. 383.
    C². Three spines on basal segment of antenna.
      D¹. Carapace not paved with flattened granules.
        E¹. Carapace widest between tips of fourth antero-lateral spines (not counting orbital spine).
          F¹. Three or four supraorbital spines, exclusive of preorbital and exorbital spines. Propodites of legs very long and slender. **cornutus**, p. 386.
          F². Two supraorbital spines only, exclusive of preorbital and exorbital spines. Propodites of legs moderate. Size small. **acuticornis** (over 18 mm. long), p. 388.
        E². Carapace as wide between tips of third antero-lateral spines as between tips of fourth spines. Carapace closely granulate and tuberculate and densely pilose_________________**pilosus**, p. 394.
      D². Carapace paved with flattened granules, concealed by short hair. **verrucosus**, young, p. 400.
  B². Manus not armed above with spines or spinules.
    C¹. Rostral horns sharp or acute.
      D¹. Rostral horns elongate.
        E¹. A tubercle at middle of proximal end of outer surface of manus. **orcutti**, p. 397.
        E². No tubercle on outer surface of manus.
          F¹. Carapace with a lateral angle. Size small.
            G¹. Hepatic and first branchial spine bifid, or with a secondary spine_______**acuticornis**, small (under 18 mm. long), p. 388.
            G². Hepatic and first branchial spine simple____**spinipes**, p. 391.
          F². Carapace with sides rounded, without angle.
            G¹. No sharp spines, only tubercles or stout, blunt spines on dorsal surface of carapace_____________________**armatus**, p. 399.
            G². Some spines on dorsal surface of carapace__**rostratus**, p. 386.
      D². Rostral horns very short. Carapace ovate-oblong.
        E¹. A well marked postero-lateral spine.
          F¹. Four stout antero-lateral spines____**hemphilli**, immature, p. 395.
          F². Only two antero-lateral spines_________________**holderi**, p. 392.
        E². A small postero-lateral tubercle. Carapace densely pubescent. **bahamensis**, p. 393.
    C². Rostral horns blunt, either subtruncate or tuberculiform.
      D¹. Carapace paved with close-set granules or tubercles.
        E¹. Carapace paved with convex tubercles each of which is granulate_______________________________**hemphilli**, mature, p. 395.
        E². Carapace paved with flat, tessellated granules.
          F¹. Lateral margins of carapace spinous. Wrist nearly smooth above, three tubercles on inner edge_____________**verrucosus**, p. 400.

F^{2}. Lateral margins of carapace with lumpy protuberances. Wrist tuberculate above, five tubercles on inner margin_**bellii**, p. 403.

D^{2}. Carapace not paved with close-set granules or tubercles.

E^{1}. Six or more antero-lateral spines or spinules. Chelipeds and ambulatory legs elongate---------------------**pygmaeus**, p. 406.

E^{2}. Four or three antero-lateral spines or spines and tubercles.

F^{1}. Carapace nearly smooth; marginal spines simple. **braziliensis**, p. 404.

F^{2}. Carapace more or less lumpy; marginal spines more or less complex, either with a secondary spine or accessory tubercles.

G^{1}. Only two spines, lobes or teeth on basal segment of antenna.

H^{1}. A spine on, or just above, postero-lateral margin of carapace.

J^{1}. Carapace with areolations smooth (non-granulate). Three curved spines on antero-lateral margin of branchial region.

K^{1}. Two parallel and nearly transverse rows of well marked tubercles and spines on postero-lateral region. **caribbaeus**, of small or medium size, p. 409.

K^{2}. One row of not more than two or three well marked tubercles and spines on postero-lateral region. Prehensile edges of fingers of very old specimens entire, not crenulated, in the gape, except on the tubercle-----------------------**hispidus**, p. 406.

J^{2}. Carapace with areolations granulate. Two large lobes and a spine on antero-lateral margin; the first lobe hepatic. **tuberculatus**, p. 418.

H^{2}. A tubercle, instead of a spine, on, or just above, postero-lateral margin of carapace.

J^{1}. Carapace very wide, the anterior, marginal, branchial lobe strikingly protuberant. Postero-lateral slope of carapace smooth, behind the row of two conical tubercles which leads obliquely inward from the spine at the lateral angle. Rostral sinus V-shaped--**tortugae**, p. 417.

J^{2}. Carapace narrower, the anterior, branchial protuberance not strikingly prominent. Postero-lateral slope of carapace rough with a few tubercles or granules.

K^{1}. A well-marked, postero-lateral tubercle present, which is the outermost of a transverse row of three, this row having a similar row in front of it. Prehensile edges of fingers crenulated along the gape. Rostral sinus U-shaped-----------**caribbaeus**, large, p. 409.

K^{2}. An almost transverse row of two large tubercles leads inward from the spine at the lateral angle; the tubercles behind and immediately in front of it are all very small, or granules. Rostral sinus V-shaped in young, U-shaped in old-------**pleuracanthus**, p. 411.

G^{2}. Three spines on basal segment of antenna.

H^{1}. Lateral spines of carapace simple. Wrist smooth except for a lobe on inner margin-----------**laevimanus**, p. 419.

H^{2}. Lateral protuberances of carapace not simple. Wrist granulate, three or four granules on inner margin. **sinensis**, p. 419.

A². Carapace with smooth, oblique, branchial sulci. Rostral horns very short. Minor teeth of orbit tuberculiform, inconspicuous. Subgenus **Mithraculus**, p. 421.

B¹. Carapace broader than long.

C¹. Antero-lateral margins cut into rounded lobes only.

D¹. Antero-lateral margin cut into three lobes.

E¹. Posterior part of carapace eroded. Inner or anterior margin of cheliped laminate, up to middle of palm-------- **nodosus**, p. 429.

E². Posterior part of carapace nodose, not eroded. Inner margin of cheliped not laminate------------------------ **coryphe**, p. 426.

D². Antero-lateral margin cut into four lobes. Wrist smooth, margin not laminate nor dentate-------------------------- **sculptus**, p. 422.

C². Antero-lateral margins cut into spines or angular lobes or spines and lobes.

D¹. Four antero-lateral protuberances behind the orbit. Wrist smooth above and with one inner tooth---------------- **forceps**, p. 431.

D². Three antero-lateral protuberances behind the orbit. Wrist more or less uneven above.

E¹. Carapace nearly half wider than long. Two lobes of basal segment of antenna equally advanced------------- **denticulatus**, p. 428.

E². Carapace not much wider than long. Two lobes of basal segment of antenna not equally advanced.

F¹. Wrist obscurely tuberculate. Palm without tubercle on outer surface at articulation with wrist.------------- **ruber**, p. 432.

F². Wrist prominently tuberculate. Palm with small depressed tubercle on outer surface at articulation with wrist. **areolatus**, p. 433.

B². Carapace longer than broad---------------------- **cinctimanus**, p. 438.

DOUBTFUL SPECIES

A¹. Carapace one-fourth longer than wide, without spines or lateral angle. **leucomelas**, p. 421.

A². Not described------------------- **Mithrax**, sp. indet. (Valparaiso), p. 421.

A³. Figured but not described. May be a young **Mithrax**.----''**Manilatus poeyi** Forns.'' [47]

ANALOGOUS SPECIES ON OPPOSITE SIDES OF THE CONTINENT

Atlantic	Pacific
spinosissimus.	*rostratus.*
acuticornis.	*spinipes.*
hemphilli.	*orcutti.*
verrucosus.	*bellii.*
coryphe.	*denticulatus.*
ruber.	*areolatus.*

SPECIES ONCE REFERRED TO MITHRAX, NOW IN OTHER GENERA [48]

Mithrax affinis Brito Capello = *Schizophrys aspera* (Milne Edwards).

Mithrax asper Milne Edwards = *Schizophrys aspera* (Milne Edwards).

Mithrax quadridentatus MacLeay = *Schizophrys aspera* (Milne Edwards).

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[47] Gundlach and Torralbas, An. Acad. Habana, vol. 36, 1899 (1900), text-fig. on p. 330; reprint, 1917, pl. [4], fig. 8.

[48] See also the index to this volume.

Mithrax spinifrons A. Milne Edwards = *Schizophrys aspera* (Milne Edwards).

Mithrax triangularis Kossmann = *Schizophrys aspera* (Milne Edwards).

Mithrax suborbicularis Stimpson = *Cyclax suborbicularis* (Stimpson).

Subgenus MITHRAX

Carapace without conspicuous, smooth, oblique, branchial sulci. Rostral horns usually as long as wide, sometimes elongate and spiniform. Minor teeth or tubercles of orbit plainly marked, though small.

MITHRAX (MITHRAX) SPINOSISSIMUS (Lamarck)

CANGREJO DE LA SANTA VIRGEN (Cuba); CABOUCA (Martinique)

Plate 135

The Lazy Crab HUGHES, Nat. Hist. Barbados, 1750, p. 262, pl. 25, fig. 1 (part: chelipeds and legs only).

Cangrejo Santoya PARRA, Descripcion de diferentes piezas de historia natural, 1787, p. 122, pl. 44.

?*Cangrejo Dentòn* PARRA, Descripcion de diferentes piezas de historia natural, 1787, p. 136, pl. 51, fig. 1.

Maia spinosissima LAMARCK, Hist. Nat. des Anim. sans Vert., vol. 5, 1818, p. 241 (type-locality, Ile-de-France; type in Paris Mus.). Locality erroneous.

Mithrax spinosissimus MILNE EDWARDS, Mag. Zool., vol. 2, 1832, classe 7, pl. 2 (colored) and 3 and description (Antilles; Martinique).—RATHBUN, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 261, and synonymy.—GUNDLACH and TORRALBAS, An. Acad. Habana, vol. 36, 1899 (1900), p. 305, text-fig. on p. 326; reprint, 1917, p. 14, pl. [3], fig. 7.

Mithrax hispidus DOFLEIN (not Herbst), Sitz. k. bayer. Akad. Wiss., math.-phys. Cl., vol. 29, 1899, p. 179; St. Pierre, Martinique, 4 to 5 fathoms.

Diagnosis.—Large, carapace without lateral angle. Three supraorbital spines between preorbital and postorbital spine. Fifth lateral spine in line with gastro-cardiac suture. No spine on basal antennal segment at articulation of next segment.

Description of adult.—Carapace nearly naked, subcircular, about as broad as long; cervical suture deep; hepatic and cardiac regions distinctly delimited; surface rough with short spines, those in the center of the carapace blunt, those elsewhere sharp. Rostral horns narrow, extremity obliquely truncate and granulate, separated by a U-shaped sinus of equal length and breadth; at base of horns, two stout spines and behind these, two others similar but farther apart. Preorbital spine stouter than rostral horn, truncate and much less advanced than rostrum; between this and the truncate postocular lobe there are three smaller teeth; on the suborbital margin one acute spine outside the antennal segment; two spines on the antennal segment, the outer one small and acute, the inner one similar to the rostrum but a little more advanced, and bearing a secondary spine or spinule on the outer side near the end. Six spines on lateral margin, the first two double, the first one occupying the hepatic region, the last one smallest and on the postero-lateral margin. One suborbital, two large subhepatic, and numerous subbranchial spines, besides one at the angle of the buccal cavity and a row of three on the pterygostomian region.

Chelipeds of male massive, much longer than legs; merus armed with numerous stout spines, of which eight or nine are on the outer margin, the rest irregularly disposed; carpus dotted with unequal spines of which about 5 are on the inner margin; manus high, compressed, armed above with a more or less double row of spines; and on the inner surface with two to four spines on the proximal half. In the old males the spines of the cheliped tend to become blunt and tuberculiform, those of the arm retaining their spinous character the longest. Fingers curved, leaving a wide gape, in the middle of which is a strong tooth on the dactyl. Tips with crenated edges behind which are a few low tubercles.

Legs spinous and coarsely hairy, hair most dense on the last 2 segments; propodus very elongate and compressed.

Chelipeds of adult female no longer and not much stouter than legs of first pair; manus tapering a little distally; fingers narrowly gaping, with numerous denticles on the prehensile edges.

Medium-sized specimens.—The carapace is relatively longer, all the spines are sharper than in the old, the rostral horns curve inward at the tips which are sharp; the carapace is short-hairy; the chelipeds of both sexes are small, the gape occupies only about half length of fingers.

Young.—The last-mentioned characters are exaggerated, the rostral horns are relatively much longer and slender, being about one-fifth as long as remainder of carapace, two spines on the suborbital margin outside the antennal segment, the chelipeds are no longer or stouter than the last pair of legs, the gape of the fingers is reduced.

Color.—Vinous red with yellowish tints (A. Milne Edwards). Bright carmine (A. H. Verrill). Thorax dark red, ambulatories brick red, chelipeds rose red with yellow fingers (Doflein).

Measurements.—This is the largest species of *Mithrax.* Male (41777), entire length of carapace 170, length exclusive of horns 163, width just in front of fourth branchial spines 167, width between tips of fourth branchial spines 174, greatest width across subbranchial regions 184, length of manus below 187, above 97, greatest height of manus, including tubercle, 74.3 mm.

Range.—Carolina, Bahamas, and Florida Keys to the West Indies.

Material examined.—

Either North or South Carolina; Rev. M. A. Curtis; chelipeds of a very large specimen (22899).

Carysfort Reef, Florida, 120 miles NE. of Key West; 1884; Edward Palmer; 2 females (1 shedding) (9257).

Grassy Key Lake, Florida; 3¾ miles NW. ½ N. of E. end of Grassy Key; 8 feet; rky.; January 28, 1903; station 7431, *Fish Hawk;* 1 young (46876).

Grassy Key Lake, Florida; 2¾ miles N. ½ W. of Channel Key; 7.5 feet; rky.; January 29, 1903; station 7440, *Fish Hawk;* 1 young male (46972).

Key West, Florida: December, 1883; D. S. Jordan; 1 female (5758). 1884; *Albatross;* 1 male, 2 females (7339). 1885; Henry Hemphill; 5 males, 3 females, 2 young (9258). C. N. E. Eliot; 1 young (22987). January 28 and February 3, 1901; B. A. Bean and W. H. King; 2 young (24852).

Garden Key, Dry Tortugas, Florida; 1 male (15081).

Florida; G. Wurdemann; 3 males, 2 females (2093).

Florida Keys; *Fish Hawk;* 1 young (46877).

Esperanza, Cuba; shallow water about keys; May, 1914; stations 1 and 2, *Tomas Barrera* Exped., Bartsch and Henderson; 3 females (2 ovigerous) (48395).

Los Arroyas, Cuba; May 20, 1914; station 8, *Tomas Barrera* Exped., Bartsch and Henderson; 7 young (48668).

Havana, Cuba; June 4, 1884; D. S. Jordan; 1 ovigerous female (7854), with many young stalked barnacles attached.

Off Havana, Cuba; lat. 23° 10′ 39″ N.; long. 82° 20′ 08″ W.; 98 fathoms; Co.; April 30, 1884; station 2159, *Albatross;* fragments (6943).

Harbor of Santiago de Cuba; May, 1907; Lewis Brooks; 1 male, very large (41777).

Kingston Harbor, Jamaica; 1893; R. P. Bigelow; 1 male (17988).

Jamaica; 1910; C. B. Wilson; 1 ovigerous female (43090), covered with bryozoans, serpulids, and red foraminifera.

Jeremie, Hayti; Dr. D. F. Weinland; 1 male (1963, M. C. Z.).

St. Thomas; December, 1871; U. S. C. S. S. *Hassler*; 2 males, 1 female (1962, M. C. Z.).

Simson's Bay lagoon, St. Martin, Dutch West Indies; shallow water; September, 1905; J. Boeke; 1 male, 1 female (Mus. Leiden and Amsterdam).

Bay of Philipsburg, St. Martin, Dutch West Indies; September, 1905; Dr. Shaw; 1 young female (42976).

Guadeloupe; from Museum of L. Guesde; 1 female (4095).

MITHRAX (MITHRAX) ROSTRATUS Bell

Plate 255

Mithrax rostratus Bell, Proc. Zool. Soc. London, vol. 3, 1835 (1836), p. 171 (type-locality not given; type not extant); Trans. Zool. Soc. London, vol. 2, 1836, p. 51, pl. 10, figs. 1–1*b*.—A. Milne Edwards, Crust. Rég. Mex., 1875, p. 101.

Diagnosis.—Size medium. Carapace tuberculate and spinous; without lateral angle. Wrists covered with warty tubercles.

Description (after Bell).—Carapace rounded, anteriorly produced, moderately elevated, regions distinct; surface granulate and tuberculate, and with the margins and outer part of the branchial regions spinous. Rostral horns elongate, apices curved inward. Orbit nearly circular, surrounded with warty tubercles. Antennae rather longer than rostrum; basal joint with a tuberculated tooth at its outer angle; second and third joints rather broad, with long hairs on each side; fourth joint cylindrical and elongated.

Chelipeds of male moderately robust, of female rather slender; movable finger in male with a tubercle near base; hand smooth, other joints spinous and tuberculated. Legs spinous and tuberculate, excepting on the last two joints which, like the others, are hairy; dactyls of male furnished with a series of small denticulations beneath; female without them.

Color.—Lightish brown; hands mottled.

Measurements.—Length of carapace, 2 inches 2 lines (about 53 mm.), including rostrum which is 4 lines (about 10 mm.) long and 2 lines broad; width of carapace nearly 2 inches.

Locality.—Bell describes this species among a lot of "Crustacea of the Coasts of South America." A. Milne Edwards thinks that it is probably from the Galapagos Islands. It has not been collected since the original description.

MITHRAX (MITHRAX) CORNUTUS Saussure

Plate 137, figs. 3 and 4; plate 256

CORAL CRAB; RED SPIDER CRAB (Verrill)

Cangrejo espinoso Parra, Descripcion de diferentes piezas de historia natural, 1787, p. 127, pl. 47, fig. 1.

Mithrax cornutus Saussure, Rev. et Mag. Zool., ser. 2, vol. 9, 1857, p. 501 (type-locality, Antilles; cotypes in Geneva Mus.); Mém. Soc. Phys. Genève, vol. 14, 1858, p. 423 [7].—A. Milne Edwards, Crust. Rég. Mex., 1875, p. 97, pl. 22.—Miers, *Challenger* Rept., Zool., vol. 17, 1886, pp. 86 and 87.—Verrill, Trans. Conn. Acad. Arts and Sci., vol. 13, 1908, p. 400.

Diagnosis.—Antero-lateral spines not all in the same line, the last one situated at lateral angle of carapace. Three spines on basal antennal article. Three or four spines on supraorbital margin exclusive of preorbital spine. Two rows of spines above palm. Propodites of legs long and slender.

Description.—A large species, resembling *M. spinosissimus*, the dorsum being armed with short, sharp spines. Carapace and appendages covered with a short woolly pubescence; legs furnished also with rather scanty, long, fine hairs. Rostral horns regularly tapering, much longer in the young than in the old. In small specimens the rostrum is contained from two and two-thirds to three and one-half times in remaining carapace-length. Besides the preorbital spine and the 2 spines of the antennal segment, there are 6 spines on the margin of the orbit, 3 inferior and lateral, 3 superior, according to A. Milne Edwards. In the specimen in hand there is still another superior spine—that is, 4 in all—of which 2 are on the outer slope of the preorbital spine, next one larger, independent, fourth one smallest, on the inner slope of the extraorbital spine. This last is not shown by A. Milne Edwards, although his figure has an unequal number of spines on the two orbits. In small specimens, under 33 mm. long, there are only 2 spines on the supraorbital margin, between the supraocular and postocular spines. Antero-lateral spines 4, the first or hepatic spine being triple, the other spines double, or with a secondary spine in front of the primary spine; fourth spine situated at the lateral angle of the carapace, opposite the gastro-cardiac suture and a little below the level of the line of the preceding spines; a shorter postlateral spine, also one similar to the latter, a little higher up on the dorsal surface. The longest spine of the basal antennal segment has 2 or 3 spinules on its outer margin in a medium-sized specimen (32717); a small sharp spine is at the base of the following segment of the antenna.

Chelipeds stout, longer than any of the legs in the male; about 5 rows of spines on the merus, the spines of the 2 upper rows longest and sharpest; carpus armed with a number of sharp spines; hand elongate armed with 2 rows of spines above. Two rows of long spines and 2 rows of short spines on the merus joints of the legs; carpus joints armed with long spines; propodus joints long, narrow, subcylindrical and little roughened. Dactyli long and slender.

Color.—Yellowish or rosy; often rose-color (Saussure).

Measurements.—Male (Martinique), length of carapace 92, width 90; length of manus 82, length of legs of first pair 135 mm. (A. Milne Edwards). Female (Martinique), length of carapace 65, width 59, length of manus 33, length of legs of first pair 90 mm. (A. Milne Edwards). Female (32717), total length of carapace 40.4, length without horns 31.5, width without spines 26, with spines 32 mm.

Range.—From Florida Straits (46 miles south of Key West), 589 fathoms (Miers), to Bahia, Brazil, in shallow water. Dominica, 40 to 150 fathoms (A. E. Verrill). Martinique (A. Milne Edwards). Bermuda (A. E. Verrill).

Material examined.—

Antilles; 2 females, cotypes (Geneva Mus.).

Off Havana, Cuba; lat. 23° 10′ 48″ N.; long. 82° 19′ 15″ W.; 121 fathoms; fne. gy. Co.; Jan. 17, 1885; station 2330, *Albatross;* 1 carapace (9502).

Between Jamaica and Haiti; lat. 17° 43′ 40″ N.; long. 75° 38′ 25″ W.; 52 fathoms; Co. brk. Sh.; Feb. 29, 1884; station 2136, *Albatross;* 1 male (7760).

Soufrière Bay, Dominica; 100 fathoms; A. H. Verrill; 1 female (32717).

Bahia, Brazil; shallow water; H. M. S. *Challenger;* 1 small male (Copenhagen Mus.).

MITHRAX (MITHRAX) ACUTICORNIS Stimpson

Plate 136, figs. 1 and 2; plate 257, fig. 1

Mithrax acuticornis Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1870, p. 116 (type-localities, off the Quicksands [Florida], 34 fathoms, and west of the Tortugas, 37 and 42 fathoms; types not extant).—A. Milne Edwards, Crust. Rég. Mex., 1875, p. 98.—Rathbun, Bull. U. S. Fish Comm., vol. 20, for 1900, part 2 (1901), p. 66 (part).—A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 390, pl. 11, fig. 11, text-figs. 22 and 23 (♀?).

Nemausa rostrata A. Milne Edwards, Crust. Rég. Mex., 1875, p. 81, pl. 17, fig. 4 (type-localities, west of Florida, lat. 26° 16′ N., 20 fathoms; near Mujeres, Yucatan, 12 fathoms; Martinique; cotypes, 1934, 1935, 1936, M. C. Z.).

Mithrax (*Nemausa*) *acuticornis* Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 260 (part), pl. 37, fig. 1.

Diagnosis.—Small. Carapace with lateral angle. Two supraorbital spines between preorbital and postorbital spine. Fourth lateral spine at lateral angle of carapace and behind the line of the gastro-cardiac suture. A small spine on basal antennal article at articulation of next article.

Description.—A small species. Carapace distinctly longer than broad, forming an angle at the meeting of the antero-lateral and postero-lateral margins. Cervical and cardiac sutures deep. Surface covered with sharp spines which are very short and scanty on the gastric region, longer and more numerous elsewhere. Rostral horns straight except for a slight curving inward at the tip, divergent, regularly tapering, and varying in length from one-seventh to one-sixth of the length of the remainder of the carapace. Principal spine of basal antennal article straight or slightly curved and half as long as rostrum; two other spines on the article, one of which forms part of the orbital border and the other, very small, lies at the base of the following, or first movable, article; in the larger specimens there is also a small, rectangular tooth on the outer margin, close to the orbit. The orbit is armed with one spine below, outside the antenna, one at outer angle, and three above, of which the prominent preorbital spine is one.[49] Four large antero-lateral spines and one postero-lateral; the first, or hepatic, spine is double, having a small spine on its anterior side; the next three antero-lateral spines have each a small spine in front of it; the last of these antero-lateral spines is the longest and is situated at the lateral angle of the carapace, below the level of the others; the postero-lateral spine is shorter than the four antero-lateral.

Chelipeds of male about as long and as stout as the legs of the first pair; merus spinous, with two rows of long spines above; carpus covered with short, conical, subacute spines or tubercles, three of which are on the inner margin; manus with one or a few spinules above near proximal end; these are evident only in larger specimens, scarcely a trace in those with a carapace-length less than 18 mm.; fingers with a short and narrow gape, edges denticulate, a larger denticle on the dactylus in the middle of the gape. The spines on the legs are arranged in two rows above on the merus and carpus and are especially long in the first two pairs.

Color.—General color, deep red orange. Fingers somewhat purplish red with narrow white bands near bases (Henderson).

Measurements.—Male (25592), total length of carapace 21, length without horns 18.2, width without spines 15.8, width with spines 18 mm. Largest specimen, male (46964), total length 24, without horns 20.5, width without spines 17, with spines about 20 mm.

Range.—Gulf of Mexico (west coast of Florida); Florida Keys from Miami westward; Yucatan Channel. Porto Rico, Santa Cruz, Flannegan Passage, Montserrat and Grenadines (A. Milne Edwards for *Nemausa rostrata*). Off Bahia, Brazil. Depth, 12 to 45 fathoms; to 163 fathoms (A. M. E.).

Material examined.[50] See table, page 390.

Remarks.—*M. acuticornis*, of which no large specimens have yet been reported, may very easily be confused with the young of *M. cornutus* and *M. spinosissimus*. The body of *spinosissimus*, young, is rounder than in the other two species; the gastric region is less uneven in *cornutus*, young, and its granulation finer, sharper and less regular; rostrum of *acuticornis* shorter than in specimens of equal size of the other two species. The other notable differences are tabulated below (p. 391).

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[49] Stimpson in his description gives six spiniform teeth to the orbit, not including those of the antennal joint, but this appears to be an error.

[50] As this small species has in the past been confused with the young of other species, only such specimens are included in the table as have been subject to careful revision.

Material examined of Mithrax acuticornis

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
Florida:	° ′ ″	° ′ ″			°F						
Miami			30					J. B. Henderson	1♂ 1♀	46965	
Gulf Stream off Cape Florida.	2⅛ miles SSE. of Fowey Rocks Light.		45	rky	70	Mar. 25, 1903	7511	*Fish Hawk*	1 y.	47084	Paper-shell.
									1 ♂	46964	
Western Dry Rocks, Key West.			25					J. B. Henderson	2♂ 1♀	50390	
Straits of Florida	24 43 00	83 25 00	37				11	*Blake*	3♂ 2♀	3035, M. C. Z.	
North of Dry Tortugas	25 04 30	82 59 15	26	fne. wh. S. brk. Sh.		Mar. 19, 1885	2414	*Albatross*	1♀	15813	
Off Cape Romano	25 50 15	82 41 45	21	sdy	°C 20	Apr. 2, 1901	7124	*Fish Hawk*	1♂	25591	
Do	26 00 00	82 57 30	24	fne. S. bk. Sp. brk. Sh.		Mar. 19, 1885	2413	*Albatross*	2♀	15812	
Off Oyster Bay	26 19 00	83 11 00	27	S. Algae	°F 68	Mar. 21, 1889	5108	*Grampus*	1 y. ♂	15206	
Off Pine Island	26 33 00	83 10 00	28	sdy	66	Apr. 2, 1901	7123	*Fish Hawk*	1♂ 1♀ 1 y.	25592	
Do	26 33 30	83 15 30	27	fne.wh.S.bk. Sp.		Mar. 18, 1885	2411	*Albatross*	1♂	15817	
Off Caseys Pass	27 04 00	83 21 15	26	crs.gy.S.brk. Sh.		do	2409	do	1♀	15819	
Off St. Martin's Reef	28 46 00	84 49 00	26	crs. S. Co		Mar. 15, 1885	2406	do	1♂	15811	
West coast of Florida	26 16 00		20			Apr. 24, 1872		W. Stimpson, *Bache.*	1 small ♂, shedding.	1934, M. C. Z.	Cotype of *Nemausa rostrata.*
Do			19					do	1 young ♀	1935, M. C. Z.	Do.
Yucatan Channel:											
North of Cape Catoche	22 18 00	87 04 00	24	wh. R. Co		Jan. 30, 1885	2365	*Albatross*	13	15818	
Do	22 08 30	86 53 30	25	Co. S		do	2362	do	1 y.	16307	
Do	22 07 30	87 06 00	21	wh. R. Co		do	2363	do	2♂ 1♀	15814	
Off Mujeres Island			12	crs. Co. S				do	1 very young ♂	1936, M. C. Z.	Do.
Porto Rico: Mayaguez Harbor.	Red Buoy, entrance harbor, NE.½E., ½ mile.		25–30	S. M. Sh		Jan. 20, 1899	6062	*Fish Hawk*	1 y. ♀	24183	Paper-shell.
Flannegan Passage			27	S. brk. Sh	77.75		142	*Blake*	1♂	3950, M. C. Z.	
	Lat. S.										
Brazil: Off Bahia	11 49 00	37 20 00	40			Jan. 18, 1872	11	*Hassler*	1♂ 3♀ (1 ovig.)	1467, M. C. Z.	

Comparison of Mithrax acuticornis with spinosissimus and cornutus

spinosissimus, young	*acuticornis*	*cornutus*, young
Two well-developed spines on lower margin of orbit between outer spine and antennal segment.	One spine and a shallow lobe, sometimes spine-tipped, on lower margin of orbit between outer spine and antennal segment.	Two well-developed spines on lower margin of orbit between outer spine and antennal segment.
No spine on basal antennal segment at articulation of next segment.	A small, sharp spine on basal antennal segment at articulation of next segment.	A small, sharp spine on basal antennal segment at articulation of next segment.
Carapace without lateral angle; the antero-lateral and postero-lateral margins curve gradually into each other.	Carapace with a lateral angle formed by the meeting of the antero-lateral and postero-lateral margins, and armed with one of the longest marginal spines.	Carapace with a lateral angle formed by the meeting of the antero-lateral and postero-lateral margins and armed with one of the longest marginal spines.
The fifth lateral spine, counting the hepatic as the first, is in line with the gastro-cardiac suture.	The fourth lateral spine is a little behind the line of the gastro-cardiac suture.	The fourth lateral spine is a little behind the line of the gastro-cardiac suture.

MITHRAX (MITHRAX) SPINIPES (Bell) [51]

Plate 136, figs. 3 and 4; plate 262, fig. 5

Pisa spinipes BELL, Proc. Zool. Soc. London, vol. 3, 1835 (1836), p. 171 (type-localities, Galapagos, 16 fathoms (male); St. Elena, 6 fathoms (female); types not extant); Trans. Zool. Soc. London, vol. 2, 1836, p. 50, pl. 9, figs. 6, 6*s*, 6*t*, 6*u*.

Nemausa spinipes A. MILNE EDWARDS, Crust. Rég. Mex., 1875, p. 82.

Mithrax (*Nemausa*) *spinipes* MIERS, *Challenger* Rept., Zool., vol. 17, 1886, p. 85.

Diagnosis.—Small. Horns long. Hepatic and first branchial spine single. Two small spinules side by side on anterior mesogastric region.

Description.—Carapace similar to that of *M. acuticornis*, having a lateral angle at which is situated a prominent spine a little below the level of the other marginal spines; as in that species, there are 5 lateral spines besides the orbital, the last and smallest being postlateral; the hepatic and the first branchial spine are single, not double as in *acuticornis*. On the anterior part of the mesogastric region and a little in front of the line of 4 protogastric spines, there are two small spinules side by side instead of a single one, as in *acuticornis*. The spines of the rostrum, orbits, and basal antennal segment correspond to those of *acuticornis*. The small and immature male examined shows several spines on the dorsal surface of the wrist but none on the inner margin and none on the upper edge of the palm. Legs much as in *acuticornis*.

Measurements.—Male (16064), entire length of carapace 13, length from base of rostral horns 11, width without spines 8.2, with spines 10.3 mm.

Range.—From Gulf of California to Galapagos Islands and St. Elena, Ecuador. Depth, 6 to 33 fathoms.

Material examined.—Gulf of California; lat. 24° 55′ 15″ N.; long. 110° 39′ 00″ W.; 33 fathoms; fne. gy. S. brk. Sh.; temp. 64.5°; station 3001, Str. *Albatross;* 1 male immature (16064).

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[51] If *Cancer spinipes* Herbst (Naturg. Krabben u. Krebse., vol. 1, 1790, p. 239, pl. 17, fig. 94) be a *Mithrax*, then Bell's species needs a new specific name.

MITHRAX (MITHRAX) HOLDERI Stimpson

Plate 138, figs. 1 and 2; pl. 257, fig. 2

Mithrax subspinosus Kroyer, MS. labels in Copenhagen Mus.

Mithrax holderi Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 117 (type-locality, Tortugas, 7 fathoms; type not extant).—Rathbun, Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 259, pl. 3, fig. 2; Bull. U. S. Fish Comm., vol. 20, for 1900, part 2 (1901), p. 69.

Diagnosis.—Elongate, ovate-oblong. Carapace without dense pubescence, but uneven with many areolae and tubercles. A well-marked postero-lateral spine.

Description.—Carapace suboblong, length definitely greater than width, lateral angles far back. Carapace covered in the main with small areolae, each of which is surmounted by from one to several pointed granules or tubercles; the largest of these tubercles are four which form an arch above the posterior margin and one above the postero-lateral branchial spine. The surface has much the appearance of a *Microphrys.* There are only two large antero-lateral marginal spines—one on the swollen hepatic region, and the other at the lateral angle; in front of the latter, a small spine; one of intermediate size on the postero-lateral margin; all are hooked forward at the tip. Rostral horns short, triangular, tips turned inward. The basal segment of antenna bears three spines, the one at the antero-lateral angle longer than the rostral horns and reaching nearly as far forward, a shorter one on orbital margin and a small but sharp one at the base of the next segment. Movable portion of antennae bordered laterally by long hairs. The margin of the orbit has, besides the postorbital and the long preorbital spine, two small ones above and one below. Chelipeds of moderate size. The merus has an irregular row of spines on upper margin, a few small spines either side, and two tubercles on the lower, outer margin. Carpus sparingly tuberculated; manus smooth. Legs long-hairy, stout, flattened above, the upper surface of merus and carpus bordered by spines, propodus unarmed.

Measurements.—Female (25567), length of carapace, horns included 27; length, horns excluded, 25.3; width of same, spines included, 26.5; width, spines excluded, 23.4 mm.

Variation.—The young are wider anteriorly, and the spines sharper.

Range.—Florida Keys; Greater Antilles; Virgin Islands. Low water to 21 fathoms.

Material examined.—

Ragged Keys, Florida; 1901; J. E. Benedict; 1 mature female (25567).

Cabañas, Cuba; June 8–9, 1914; Henderson and Bartsch, collectors; station 16, *Tomas Barrera* Exped.; 1 young female (48746).

Off Havana, Cuba; May 26, 1893; State Univ. Iowa Exped.; 1 female (Mus. S. U. I.).

Cabo Cruz, Cuba; 2 fathoms; Henderson and Bartsch; 2 young (50532).

Jamaica; 3 to 6 fathoms; 1 large male (Kiel Mus.). From Marine Biol. Lab. Woods Hole; 1 young female (47354).

Ensenada Honda, Culebra Island; February 9, 1899; *Fish Hawk;* 1 very young (24184).

Off Vieques, Porto Rico; Culebritas Lighthouse, N. ¼ E., 7¼ miles; 21 fathoms; Co.; February 8, 1899; station 6089, Str. *Fish Hawk;* 1 young (24207).

St. John; 1 male, 1 female (Copenhagen Mus.).

St. Croix; 1 female (Copenhagen Mus.).

West Indies; received from Copenhagen Mus.; 1 immature female (19697).

Other records.—Tortugas, Florida; low-water mark and 7 fathoms (Stimpson).

MITHRAX (MITHRAX) BAHAMENSIS Rathbun

Plate 137, figs. 1 and 2; plate 259, fig. 1

Mithrax bahamensis Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 267 pl. 38, fig. 1 (type-locality, Andros Island, Bahamas; holotype male, Cat. No. 42513, U.S.N.M.).

Diagnosis.—Elongate, ovate-oblong. Tubercles hidden by a dense pubescence. A small postero-lateral tubercle.

Description.—The carapace in its elongate, oblong-ovate shape resembles that of *holderi.* It is covered with a close, tough pubescence; there is a tuft of hair near the inner angle of the branchial region; another at the hinder end of each protogastric lobe; and a line of hair extending from the rostrum back upon the gastric region. Tubercles of carapace few and not prominent; one epigastric (paired), one protogastric (paired), 5 or 6 dorsal branchial (paired), 4 in a curve concave to the posterior margin. Rostral horns triangular, tips incurved, sharp. Preocular spine stout, acute; postocular spine curved, blunt; two intervening teeth, of which the inner one is minute. Four lateral conical protuberances, the posterior one most prominent, ending in a sharp, hooked spine; hepatic protuberance with an acute tip; the two intermediate protuberances subacute and less prominent.

Three spines on basal article of antenna, the middle one large, curved inward and nearly as advanced as front. Remainder of antenna with lateral fringes of long hair.

Chelipeds a little longer than first pair of legs, pubescent; a row of tubercles on upper margin of merus; 1 or 2 tubercles near proximal end of carpus; manus smooth.

Legs flattened above and fringed on either side with long hair; merus armed with two rows of small spines and tubercles, carpus with two tubercles arranged transversely at the middle, and propodus with one tubercle at the middle.

Color.—In alcohol, reddish brown; chelipeds lighter; fingers pinkish red for their proximal half, tips white.

Measurements.—Male, paratype, length of carapace to tips of horns 18.8, on median line 18, greatest width 16.5, width at base of lateral spines 15.4, width at postocular teeth 11.2 mm.

Material examined.—Andros Island, Bahamas; in sponges; 1888; Frederick Stearns, collector; 5 males (1 is holotype), 1 young female (42513). No other specimens are known.

MITHRAX (MITHRAX) PILOSUS Rathbun

Plate 138, fig. 3; plate 258

Cancer aculeatus Herbst, Naturg. Krabben u. Krebse, vol. 1, 1790, p. 248, pl. 18, fig. B, pl. 19, fig. 104 (type-locality, America; type in Berlin Mus.). Not *C. aculeatus* O. Fabricius, 1780.

Mithrax aculeatus Milne Edwards, Mag. Zool., vol. 2, 1832, class 7, description. Not Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 264.—Gundlach and Torralbas, An. Acad. Habana, vol. 36, 1899 (1900), p. 328; reprint, 1917, p. 16 (not *Cangrejo Dentòn* Parra, 1787, nor *M. verrucosus* Milne Edwards, 1834).

Mithrax pilosus Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 262, pl. 39 (type-locality, Abaco, Bahamas; male, holotype, Cat. No. 16299, U.S.N.M.).

Diagnosis.—Three spines on basal segment of antenna. Three or four spines on propodites of ambulatory legs. Spines on proximal half of upper surface of palm.

Description.—Carapace ovate-orbicular; width without spines greater than length in the old, less than length in the young. The greatest width of the carapace is about midway of its length, measured from rostral sinus. Surface covered with flattened tubercles which are crowded together; from some of these which are larger arise short spines or spiniform protuberances; the longest are 4 in a transverse row on the gastric region and 6 or 8 on each branchial region. Of the marginal spines there are 4 strong antero-lateral, each of which has one or more secondary spines at base; 3 small postero-lateral spines followed by tubercles at the posterior angle. Small specimens have the dorsal surface of carapace, chelipeds and legs, except the greater part of the chelae, covered with a dense tubular pubescence; this disappears with age. Rostral horns small, outer margins nearly parallel, tips hooked inward. Of about the same size and shape are the antero-external spines of the basal antennal segments which are uncommonly divergent. The segment is armed with 2 other spines, smaller, straight, and acute, one on the orbital margin, the other situated on a lower level at the base of the following segment. The margin of the orbit bears 3 spines above, one broad and hooked at outer angle and one below besides those belonging to the antennal segment.

Chelipeds and legs armed with stout spines above; arm with about 5 spines on upper margin and in the distal half with additional spines on either side of this row; 14 or 15 spines on wrist; a few small spines on proximal half of upper surface of palm, the spines tending to form in two rows. Dorsal spines of merus joints of legs arranged in 2 rows distally divergent, a few small ventral spines; about 6 of the spines of the carpus are of large size; about 3 or 4 small spines on proximal half of propodus.

Color.—Light reddish gray with circular spots of an intense red, on carapace, claws and legs (Gundlach).

Measurements.—Male in Copenhagen Museum, length of carapace, horns included, 113.2; width of same, spines excluded, 116; spines included, 124; length of propodus of cheliped 123.3; height of same, 40 mm. Male, holotype, length of carapace, horns included, 28; width of same, spines excluded, 24; spines included, 30; length of cheliped, about 26 mm.

Habitat.—Rather rare on stony bottom in deep places (Gundlach).

Range.—Bahamas and Florida Keys to Venezuela and Panama.

Material examined.—

Abaco, Bahamas; 1886; *Albatross*; 3 males, 1 female (1 male is holotype of *M. pilosus*, Cat. No. 16299, U.S.N.M.).

Cuba; 1 female, large (Berlin Mus.).

St. Thomas; 3 lots of small specimens (Copenhagen Mus.).

Porto Rico; 1899; *Fish Hawk:* Reefs at Guanica; January 29; 1 male (24400). Reefs at Ponce; January 30; 1 male, 1 young (24091). Culebra; February 11; 1 male (24401).

Guadeloupe; 1 male, 2 immature females (Geneva Mus.)

Caracas, Venezuela; 1 male of medium size, 1 female immature (Berlin Mus.).

America; 1 female, type of *Cancer aculeatus* Herbst (Berlin Mus.).

Locality not given; 1 male, very large (Copenhagen Mus.). 1 young female; received from Copenhagen Mus. (19696).

Other records.—Tortugas, Barbados, Aspinwall (Stimpson). Vera Cruz (A. Milne Edwards). St. Bartholomew (Aurivillius).

MITHRAX (MITHRAX) HEMPHILLI Rathbun

Plate 139; plate 259, fig. 2

Mithrax hemphilli RATHBUN, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 263, pl. 37, fig. 2 (type-locality, Indian Key, Florida; holotype female, Cat. No. 15823, U.S.N.M.); Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 69.

Diagnosis.—Infra-orbital and antennal region with two parallel, oblique rows of spines. One spine on propodites of ambulatory legs. Hands smooth.

Description.—Carapace wider than long in large specimens and usually longer than wide in small ones. The surface may be closely paved with tubercles, very unequal in size and elevation and granulate, not smooth as in *M. pilosus;* sometimes, as in the small type-specimen, the tubercles are almost absent from the furrows and lower parts of the carapace. The largest and most prominent tubercles are arranged as follows: One on each epigastric lobe; a transverse row of four on protogastric lobes; three median mesogastric; one urogastric; a line of three on the cardiac region forming a transverse curve concave forward; behind these, one on median line; from seven to eight on branchial region, those most posterior being spinous; four spinous tubercles on intestinal region forming a transverse curve concave to posterior margin; the two tubercles at the extremities of this curve are continuous with a line of granules and tubercles which border the posterior margin. Numerous smaller tubercles and granules are scattered and clustered about the larger tubercles; a row of granules just within and parallel to posterior margin of mesogastric region.

The rostral horns in the immature taper to a point and curve inward, inclosing a suboval sinus open anteriorly; with age, the sharp tips disappear, the rostrum becomes relatively shorter and more truncate. The same change takes place in the preorbital spine and in the most anterior spine of the basal article of the antenna. Four strong, antero-lateral spines, roughened with granules, the last three sinuses bearing a secondary spine; a small, postero-lateral spine just above margin. Outer orbital tooth flattened, tip rounded; two supra-orbital lobules, one well-defined, the other insignificant, on the posterior slope of the preorbital spine; on the lower margin of the orbit are two subequal spines, one of which is on the basal antennal article; there are three other spines on the same article, one just below the first movable segment of the antenna, one (mentioned above) just outside the same segment but not marginal; the four spines form two parallel, oblique rows, the inner row continued on the subhepatic region by four spines or tubercles.

Chelipeds of moderate size, longer in the adult than the first leg, although the merus is not much stouter than that of the leg. Merus armed with 7 or 8 spines on outer or posterior margin, and a row of smaller and more numerous spines within the margin above and below; 3 spines on inner margin; a row of tubercles on lower margin; a shorter, secondary row of tubercles on upper surface; the most distal spines are the longest. Carpus covered with unequal, spaced tubercles, 3 of which, of small size, are on the inner margin. Manus unarmed.

Legs longer and slenderer than in *M. pilosus;* merus armed above with two rows of spines which increase in size toward the distal end of the segment; carpus with a few spines; a single spine on the propodus midway of its length.

Measurements.—

Locality	Sex	Entire length of carapace	Length without horns	Width with spines	Width without spines
Guadeloupe	♂	34.5	32.5	35.1	32
Do	♀	28	26.3	31	27.3
Abrolhos Islands	♀	25.3	24.2	30	26.3
Culebra	♂	20	18.2	19.8	16.9
Do	♀	20.6	19	20.2	17.3
Pernambuco	♂	17.2	16.2	17.5	16
Indian Key	♀	17.2	15.8	16.6	13.8

Variations.—There is a great range in variation, (1) in the extent of the tuberculation of the carapace, (2) in the size and sharpness of the spines, related partly to age, (3) in the proportions of the carapace. The female from Abrolhos Islands is vastly wider and more completely tuberculated than any other specimen; this may be due to its isolated habitat. The male from Pernambuco has much stumpier rostral horns than any other specimen near its size.

Range.—Florida Keys to Rio de Janeiro, Brazil.

Material examined.—

Indian Key, Florida; 1885; H. Hemphill; 1 female, immature, holotype (15823).

Ensenada Honda, Culebra, Porto Rico; February 9, 1899; *Fish Hawk;* 2 males, 1 female (24206).

Guadeloupe; 1 male, 1 female (Geneva Mus.); labeled "*tuberculatus*".

Rio Formoso, Pernambuco, Brazil; 1876–1877; R. Rathbun; 1 male (19956).

Abrolhos Islands, Brazil; December 27, 1887; *Albatross;* 1 female (21948).

Rio de Janeiro; 1 female (Geneva Mus.).

MITHRAX (MITHRAX) ORCUTTI, new species

Plates 140 and 141

Type-locality.—Puerto Angel, Oaxaca, Mexico; 1910; C. R. Orcutt; 1 mature female, holotype; Cat. No. 47110, U.S.N.M.

Diagnosis.—A tubercle near proximal end of outer surface of palm. Basal antennal segment without a row of spines parallel to the marginal row. No spine on propodites of ambulatory legs.

Description.—Coarsely pilose. Carapace, including spines, a little longer than wide. While the surface is not closely paved with granules and tubercles as in *pilosus* and *hemphilli*, yet they are numerous and very unequal and the granules are higher than in those species.

The spines of the dorsum are arranged about as they are in *hemphilli;* the notable differences are: The posterior marginal spines of the intestinal region are more prominent and are not continuous with the spines at the extremity of the curved row above. The rostral horns are longer than in the allied species, and the tips curve inward, and are acutely pointed. The orbital teeth or spines are blunt-pointed, the one at the outer base of the preorbital spines is minute or obsolescent. Of the 4 antero-lateral spines, which also are blunt, only the first has a secondary spine on its anterior base; at the middle of each of the succeeding sinuses there is a small and insignificant spine or tubercle. The first or hepatic spine is on a lower level than the others. The fourth spine, at the lateral angle of the carapace, is further forward than in *hemphilli;* between it and the large postero-lateral spine there is a smaller, slenderer spine. On the subbranchial and subhepatic regions there is a row of 7 or 8 spines extending forward from the lateral angle of the carapace to the angle of the buccal cavity. On the basal antennal segment, the spine at the antero-external angle is the largest and is nearer the margin than is the corresponding one in *hemphilli;* besides, there is a smaller spine on the orbital margin and one at the base of the next segment; this last spine is at the end of a tuberculated ridge which borders the antennular fossa.

Chelipeds of male stout, longer than first ambulatory leg; merus with two rows of long spines above and numerous tubercles elsewhere; carpus armed with high, granulated knobs, much as in *hemphilli;* hands smooth except for a large tubercle on outer surface near proximal end and in the middle of its height; sometimes there is also a granule adjacent in the same horizontal line. Legs stout; merus armed above with 7 or 8 spines in two rows and at the distal end a single spine between those rows, below one or two small spines; 4 or 5 spines on carpus; propodus unarmed.

Color.—Crimson predominating, mixed with white; outer surface of chelipeds crimson with small white dots; abdomen about equally crimson and white, mottled.

Measurements.—

Locality	Sex	Total length	Median length	Total width	Width without spines
Panama	♂	61	56	60.2	57.7
Do	♀	67	59.4	65.8	58.4
Puerto Angel	♀	(1) 54.3	51	54.6	48.5
Mazatlan	♂	34.8	31.5	33.8	29.3

[1] Rostrum incomplete.

Range.—From Mazatlan, Mexico, to Panama.

Material examined.—Mazatlan, Mexico; A. Agassiz; 2 males (2102, M. C. Z.).

Puerto Angel, Oaxaca, Mexico; 1910; C. R. Orcutt; 1 female holotype (47110).

Mexico; T. B. Wilson collection; 1 female (Phila. Acad.).

Panama; Captain Field; 1 male, 2 females (Phila. Acad.).

Remarks.—This is undoubtedly very near *M. armatus*. In *armatus*, the palm is entirely smooth, according to Saussure, who reiterates the statement; and two of the large lateral spines are postero-lateral, according to his figure, instead of the fourth spine being at the widest part of the carapace.

MITHRAX (MITHRAX) ARMATUS Saussure

Plate 262, fig. 6

Mithrax armatus SAUSSURE, Rev. et Mag. de Zool., ser. 2, vol. 6, 1853, No. 8, p. 418 [2], pl. 13, fig. 1 (type-locality, Mazatlan, Mexico; type in Geneva (?) Mus.).—A. MILNE EDWARDS, Crust. Rég. Mex., 1875, p. 101.

Diagnosis.—Size medium. Carapace without lateral angle, but with 5 lateral spines. Dorsum tuberculate. Horns little divergent.

Description (after Saussure).—Body covered with stiff hairs. Carapace, exclusive of rostrum, as wide as long, rhomboid, a little rounded behind. Rostral horns elongate, slightly divergent, tips curving inward, outer margin rugose. Orbits bordered by strong spines, the antennal spine long, acute, recurved at the tip, rather remote from the orbit; supraorbital spine stout and blunt; besides, on the outer border there are 2 tubercles separated by small fissures. Lateral margins of the carapace armed with 5 long spines, the anterior of which has a smaller spine joined to it on the inner side; fifth spine postlateral. Numerous small spines on the inferior portions of the carapace. Grooves outside the gastric and cardiac regions strong. Entire carapace covered with small rounded tubercles and some larger ones disposed in regular order (see figure).

Manus of female long, smooth. Legs very spinous above, spines long, arranged in 2 rows; carpal joints without spines.

Color.—Obscure yellow.

Measurements.—Female, holotype, total length of carapace 1$\frac{3}{4}$ French inches (47.3 mm.), length of rostral horns 3$\frac{1}{4}$ lines (7.3 mm.), greatest width of carapace 1$\frac{7}{12}$ French inches (42.8 mm.). (Saussure.)

Locality.—Mazatlan, Mexico. Known from the type-specimen only.

MITHRAX (MITHRAX) VERRUCOSUS Milne Edwards

Plate 144

?Cangrejo Dentòn PARRA, Descripcion de diferentes piezas de historia natural, 1787, p. 136, p. 51, fig. 1.

Mithrax verrucosus MILNE EDWARDS, Mag. Zool., vol. 2, 1832, class 7, pl. 4 (colored) and explanation (type-locality, under stones in Robert Bay, Martinique; type in Paris Mus.).—RATHBUN, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 265, and synonymy; not Proc. Washington Acad. Sci., vol. 2, 1900, p. 142.

?Mithrax trispinosus KINGSLEY, Proc. Boston Soc. Nat. Hist., vol. 20, 1879, p. 148 (type-locality, Florida; type not extant).

Mithrax aculeatus RATHBUN, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 264. Not *M. aculeatus* (Herbst) Milne Edwards.

Mithrax verrucosus, variety, RATHBUN, Ann. Inst. Jamaica, vol. 1, 1897, p. 9.

Mithrax plumosus RATHBUN, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 67 (type-locality, Puerto Real, Porto Rico; holotype, Cat. No. 23775, U. S. N. M.).

Diagnosis.—Size medium to large. Dorsum closely paved with flat granules. Margins spinous. Wrist nearly smooth above, 3 tubercles on inner edge.

Description of fully developed male.—Cervical suture very deep. Carapace covered with flattened and closely crowded granules; nearly naked, although the granules are covered with small pits; a few dorsal spines on outer part of branchial region; spines of front and orbit truncate. Rostral horns short, separated by a deep sinus. Preorbital spine directed a little outward; 4 other spines on the orbital margin besides those on the antennal segment; in all, 3 spines on the broad basal segment of the antenna, the middle tooth the most advanced. On the antero-lateral margin 8 spines in pairs, the anterior spine of each pair the smaller, the spines of each of the first 2 pairs more or less united at base; a small postero-lateral spine. Below the lateral margin a row of about 9 spines.

Chelipeds stout; 6 sharp spines on outer margin of merus; a row of 6 spines on outer half of upper surface and 1 or 2 spines on inner half; inner margin of cheliped armed with blunt spines or lobes, one on the ischium, 4 on the merus, the distal 2 of which are at either end of a truncate lobe, and 3 or sometimes 2, on the carpus; dorsal surface of carpus smooth or nearly so, may be a little tuberculate toward proximal end; palm unarmed, elongate, a little swollen; fingers gaping, a large tooth on the dactyl near middle of gape, edges of the large spoon-shaped tips faintly crenulate, 2 bunches of hair inside the spoon.

Legs covered with coarse hair; merus and carpus spiny.

Color.—Vinous red (Desbonne). Color largely concealed by hairiness. Carapace very dark dull red, the pincers olive above and lighter olive below, tips claret-colored, teeth white; under side of body maroon flecked with white and yellow (Henderson, note on male, Cat. No. 46036).

Measurements.—Male (15075), length of carapace including rostrum 51.2, width without spines 58.3, with spines 65 mm.

Age and sex variations.—The above description applies to 2 lots of males of good size from Florida (15075 and 42130), while a single male only 26 mm. long, from Swan Islands, in the western Caribbean Sea, north of Honduras, agrees with them except as to the development of the chelae. A large number of specimens in the collection, comprising all the females and young and the undeveloped males (with the exception of 15074), differ from the adult male type as follows: The surface of the carapace is densely covered with hair. The rostral horns of the females and undeveloped males are shorter and further apart, while the horns of the young specimens are longer and sharper. The spines of the inner margin of the cheliped are slenderer and sharper, especially noticeable at the distal angle of the merus where in place of the truncate lobe in the old male there are from 1 to 3 sharp spines. The dorsal surface of the carpus is more or less spinous. The extreme proximal end of the palm is spinulous and hairy above.

Individual variation.—A male of medium size (17206) and an adult female (4171) have no spinules on the manus. They are both thin-shelled specimens with hair on carapace very short and hair on legs so scanty as to make the spines conspicuous.

A male of large size (46036) but with undeveloped chelipeds has no spinules on the manus, while two similar males (46975) have rudiments of spinules.

Habits.—Lives near the shore where it hides in holes in the rocks covered with madrepores; it is nocturnal, seeking its food only at night when it may be easily caught by using a torch (Desbonne).

Range.—From South Carolina to Fernando Noronha, Brazil.

Material examined—

Charleston, South Carolina; 1852; L. Agassiz; 1 male (2100, M. C. Z.).

Green Turtle Cay, Bahamas; E. A. Andrews; 1 female (20707).

Abaco Island, Bahamas; 1886; *Albatross;* 1 young (16301).

Miami, Florida; G. M. Gray; 1 male (42130).

Indian Key, Florida; H. Hemphill; 2 males, 7 females (14081).

Knights Key, Florida; H. Hemphill; 2 males, 11 females (14073).

Big Pine Key, Florida; H. Hemphill; 3 males, 6 females (14030); 3 males (15075).

Sand Key reef, Florida; J. B. Henderson; 3 young (46879). May 11, 1911; 3 males, 2 young females (46975). May, 1913; 2 males (46036).

Key West, Florida; H. Hemphill; 20 males, 14 females, 1 young (13820).

Key West Harbor, Florida; 1884; Edward Palmer; 3 young (15810).

Tortugas reef, Florida; J. B. Henderson; 1 young female (46963).

Florida: J. B. Henderson; 1 male (45714). G. Wurdemann; 1 young (50376).

Cabañas, Cuba; caught by copper-sulphating on reef; June 8–9, 1914; station 16, *Tomas Barrera* Exped. (Henderson and Bartsch); 1 male, 1 female, 2 young (48664).

Cape San Antonio, Cuba; caught by copper-sulphating on reef; *Tomas Barrera* Exped. (Henderson and Bartsch); 1 female (48653).

Swan Islands; February, 1887; C. H. Townsend; 1 male (15074).

Jamaica: T. H. Morgan; 1 male (17206). 1896; Kingston Harbor; F. S. Conant; 1 young male (19589).

San Domingo; 1879; W. M. Gabb; 1 female (4171).

Porto Rico; 1899; *Fish Hawk:* Boqueron; January 25; 1 young female (24099). Reefs at Ponce; January 30; 1 male, 3 females, 1 young (24088). Ponce; January 31; 2 young (24100). Playa de Ponce Reef; February 1; 4 young (24098). Arroyo; February 4; 1 young (24101). On Lighthouse Reef, Arroyo; February 3; 1 young (24102). Caballo Blanco Reef; February 7; 2 females (24089). Porto Real, Vieques Island; January 27; 1 female (holotype of *M. plumosus*), 1 young (23775). Ensenada Honda, Culebra Island; February 11; 4 young (24097). Fajardo; February 17; 2 females (24090).

St. Thomas: 1884; *Albatross;* 3 young (16191). French Bay; ½ to 2½ fathoms; July 5, 1915; Clarence R. Shoemaker; 1 male (50375); gift of Carnegie Institution.

Guadeloupe: Desbonne, collector; 1 male (Geneva Mus.). Saussure, collector; 1 specimen (Geneva Mus.).

Caracas Bay, Curaçao; in corals and under stones; 1920; C. J. van der Horst; 1 young male, 1 female (Amsterdam Mus.), 1 young male (56861).

Spanish Water, Curaçao; in *Porites porites;* May 5, 1920; C. J. van der Horst; 1 young male (Amsterdam Mus.).

Spanish Bay, Curaçao; among stones in the surf; May 11, 1920; C. J. van der Horst; 1 young female (56864).

Fernando Noronha Island, Brazil; 1875–1877; R. Rathbun; Hartt Explorations; 1 male, 1 female (19963).

MITHRAX (MITHRAX) BELLII Gerstaecker

Plates 142 and 143

Mithrax ursus Bell, Proc. Zool. Soc. London, vol. 3, 1835 (1836), p. 171, Galapagos Islands (not *Cancer ursus* Herbst, 1788); Trans. Zool. Soc. London, vol. 2, 1836, p. 52, pl. 10, figs. 2, 2*c*, 2*d*, 2*e*, and 3.—A. Milne Edwards, Crust. Rég. Mex., 1875, p. 103.

Mithrax bellii Gerstaecker, Arch. f. Naturg., vol. 22, pt. 1, 1856, p. 112; name substituted for *M. ursus* Bell, not (Herbst); (type-locality, that given by Bell, namely, Galapagos Islands; type not extant).

Diagnosis.—Size large. Dorsum closely paved with flat granules. Projections of margin lumpy. Wrist tuberculate above, five tubercles on inner margin.

Description.—The adult is almost devoid of hair; the carapace is convex, broadly ornate, a little broader than long. Surface covered with flattened granules and very unequal tubercles, so closely crowded that they form a continuous pavement. Margins thick, projections coarsely rounded. Rostrum with two thick, rounded horns separated by a V-shaped space, and two pairs of dorsal tubercles. The knob at the angle of the basal antennal article is curved, larger than either rostral horn and on a higher level. Preorbital lobe tuberculiform, not prominent. Orbital margin with two other, smaller tubercles above, one, not prominent, at outer angle, and one below, besides a submarginal tubercle or blunt spine on the basal antennal article, which is conspicuous in dorsal view. Just behind and between the orbits there are two longitudinal rows of 2 or 3 tubercles each, and further back a transverse, sinuous line of five tubercles. On the lateral margin are six tubercles, the first and second large and bearing an accessory, anterior tubercle, the first hepatic, the second largest of all, the third is largest of the simple tubercles, the fourth the smallest, the sixth is postlateral. Further back on the postlateral margin there is a row of minor tubercles. On the subbranchial, subhepatic, and suborbital regions there is a row of tubercles some of which are visible in a dorsal view. Pterygostomian ridge tuberculate.

On the anterior margin of the merus of the outer maxilliped there is a strong, depressed spine, pointing obliquely inward. Chelipeds of male strong; arm tuberculate above, two blunt spines or tubercles on inner margin and six of the same on outer margin; wrist covered with low knobs, inner margin with a row of five knobs; hands elongate, arcuate above, concave below; fingers moderately gaping, tips with edges finely crenulate, a strong tooth near base of dactyl, edge of fixed finger finely denticulate part way in the gape. Legs stout, three principal articles tuberculate above, especially on the margins; of dactyls dark colored for nearly a third their length.

Abdomen of male very wide, last segment with concave sides.

Young.—The young presents such a different aspect from the adult that it might easily be mistaken for another species. The carapace is narrower; the width may be less than the length. The body and legs, but not the chelae, are everywhere covered with a furry hair. The protuberances are all sharp-pointed; the rostral horns curve toward each other; the pair of spines at the base of the horns are nearly as long as the horns and are divergent, while the next pair is very small.[52]

Color.—Adult, deep purplish brown, young, light brown (Bell).

Habitat.—Sandy mud (Bell).

Measurements.—Male (25672), entire length of carapace 63.6, width 65.4 mm. Young female (33386), entire length of carapace 21.7, width 20.7 mm.

Range.—Galapagos Islands, shore to a depth of 6 fathoms (Bell). Chile (Miers).

Material examined.—Chatham Island, Galapagos Islands; shore; January 8, 1905; *Albatross;* 1 young female (33386).

Black Bight, Albemarle Island, Galapagos Islands; Stanford Univ.; 1 male (25672).

Eden Island, off Indefatigable Island; in rock pools; April 6, 1923; Williams Galapagos Exped.; 1 young male (57563).

Galapagos Islands; *Hassler Exped.*; 2 young males (1966, M. C. Z.).

MITHRAX (MITHRAX) BRAZILIENSIS Rathbun

Plate 147, fig. 1

Mithrax braziliensis RATHBUN, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 268, pl. 36, fig. 2 (type-locality, Mar Grande, Bay of Bahia, Brazil; holotype, Cat. No. 19952, U.S.N.M.); Proc. Washington Acad. Sci., vol. 2, 1900, p. 143.

Mithrax verrucosus RATHBUN (not Milne Edwards), Proc. Washington Acad. Sci., vol. 2, 1900, p. 142.

Diagnosis.—Size small. Carapace nearly smooth above, four antero-lateral spines or spines and tubercles. Horns several times broader than long.

Description.—Carapace broader than long, ovate, rather evenly convex, and in the fully developed specimen nearly smooth dorsally, the regional sulci being faint except at the middle of the carapace. Rostrum very short and broad, the anterior margin of each lobe about three times as long as the depth of the median emargination. In the very young, the sinus is much wider and the lobes correspondingly narrower. Preorbital lobe large, blunt, not projecting, being less advanced than any of the three lobes of the antennal segment. Lobes of orbital margin eight, including two small, shallow, supraorbital lobules, one at the outer angle and two below,

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[52] Rathbun, Mem. Mus. Comp. Zoöl., vol. 35, 1907, p. 74.

besides two on the antennal segment. Antero-lateral projections four, all acute and spiniform in the younger specimens, but in the old, the first or hepatic spine becomes a large tubercle, and the next spine becomes blunt. In the old there are two faint epigastric tubercles near together, two distant, protogastric tubercles, also faint, three of the same on the cardiac region forming a triangle pointing backward; a tubercle above the base of each leg of the last pair; two stronger, postlateral tubercles, one above the other, which is marginal. In the young and in some larger specimens also, the carapace is much rougher, showing numerous flattened tubercles or granules on the dorsal surface, a spinule in each antero-lateral interspace, while a spine takes the place of the postlateral marginal tubercle.

Chelipeds in the old male much longer and stouter than the legs; outer margin of merus armed with six or seven spines, inner margin with two tubercles; upper surface with three tubercles; carpus nearly smooth, two or three obscure denticles on inner margin, and in undeveloped specimens two dorsal tubercles near proximal end; palms smooth, widening distally; fingers gaping.

Legs with two rows of spines on merus and carpus.

Color.—A rich, dark crimson.

Measurements.—Large male (Geneva Museum), entire length of carapace 23, width without spines 25.2, with spines 28.2 mm. Largest carapace (2101), entire length 29.4, width without spines 34.4, with spines 38 mm.

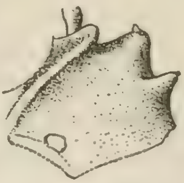

FIG. 123.—MITHRAX BRAZILIENSIS, MALE (19953), BASAL ARTICLE OF ANTENNA, × 7

Range.—Brazil, from Bay of Bahia to Rio de Janeiro.

Material examined.—

Mar Grande, Bay of Bahia, Brazil; 1876–1877; Richard Rathbun, Hartt Explorations; 1 male holotype (19952).

Mamanguape stone reef, Brazil; June 20, 1899; A. W. Greeley, collector; Branner-Agassiz Exped.; 1 young (25755).

Pernambuco stone reef at Ilha de Nogueira; A. W. Greeley, collector; Branner-Agassiz Exped.; 1 young (M. C. Z.).

Rio Formoso, Pernambuco; 1876–1877; Richard Rathbun, Hartt Explorations; 1 male, 3 females (19953).

Maceio coral reef, Alagoas, Brazil; A. W. Greeley, collector; Branner-Agassiz Exped.: July 22, 1899; 1 male (25757). July 23 and August 3, 1899; 2 young (25756).

Brazil; A. W. Greeley, collector; 1 female (25758). Rio de Janeiro; 1 large male (Geneva Mus.).

Locality not known; 1 carapace, very large (2101, M. C. Z.).

MITHRAX (MITHRAX) PYGMAEUS Bell

Plate 262, figs. 1–4

Mithrax pygmaeus Bell, Proc. Zool. Soc. London, vol. 3, 1835 (1836), p. 172 (type-locality, Panama, 10 fathoms, sand; type not extant); Trans. Zool. Soc. London, vol. 2, 1836, p. 55, pl. 11, figs. 3, 3*f*–3*h*.

Diagnosis.—Antennae long and slender. Legs slender, largely smooth. Rostral lobes short, rounded.

Description.—Carapace depressed, subovate, regions rather distinct, surface smooth, lateral margin armed with two rows of spines, the upper row of six beginning at the outer orbital angle, the lower row of about nine, partly submarginal, beginning at the lower orbital tooth and meeting the first row at the postero-lateral angle. Frontal lobes short, broad, margins slightly arcuate, or subtruncate, sinus V-shaped. Orbits with a minute preocular tooth and two small teeth above, one at outer angle and one below. Eyes large, prominent. Basal article of antennae very broad, with two marginal teeth; movable portion cylindrical, nearly half as long as body. For maxillipeds and abdomen of male, see figures 2 and 4, plate 262.

Chelipeds nearly twice as long as carapace; arm and wrist with a few minute tubercles; hand robust, smooth; dactylus with a large tubercle in the middle of the gape. Legs slender, shorter than cheliped, having a few spinules on merus and carpus, propodus smooth.

Color.—Pale brownish above, reddish beneath; hands red brown.

Measurements.—Length and width of carapace of type male 3 lines (7.6 mm.). Male (2041, M. C. Z.), length of carapace 10.3, width with spines 11.5, without spines 11 mm.

Material examined.—Pearl Islands, Bay of Panama; April, 1875; S. W. Garman; 1 male, 2 females (2041, M. C. Z.); 1 male (55117), received from Mus. Comp. Zoöl.

MITHRAX (MITHRAX) HISPIDUS (Herbst)

Plates 145 and 146; plate 147, fig. 3

CORAL CRAB

Cancer hispidus Herbst, Natur. Krabben u. Krebse, vol. 1, 1790, p. 245 (by error, 247), pl. 18, fig. 100 (type-locality, not given; type in Berlin Mus.).

Maia spini-cincta Lamarck, Hist. Nat. Anim. sans Vert., vol. 5, 1818, p. 241 (type-locality, Antilles; type in Paris Mus.).

?*Maja spini-cincta* Say, Journ. Acad. Nat. Sci. Philadelphia, vol. 1, 1818, p. 458.

?*Mithrax spinicinctus* Desmarest, Dict. Sci. Nat., vol. 28, 1823, p. 264; Consid. sur les Crust., 1825, p. 150, pl. 23, fig. 1.

Mithrax hispidus Milne Edwards, Mag. de Zool., vol. 2, 1832, cl. 7, p. (13); Hist. Nat. Crust., vol. 1, 1834, p. 322.—A. Milne Edwards, Crust. Rég. Mex., 1875, p. 93, pl. 21, fig. 1–1*b*.—Miers, Journ. Linn. Soc. London, Zool., vol. 14, 1879, p. 673, pl. 13, figs. 7 and 8.—Rathbun, Proc. U. S. Nat.

Mus., vol. 15, 1892, p. 265 (part; *pleuracanthus* excluded).—VERRILL, Trans. Conn. Acad. Arts and Sci., vol. 13, 1908, p. 404, text-fig. 40, pl. 23, figs. 3 and 4; pl. 24, fig. 1.

Mithrax-----DESBONNE and SCHRAMM, Crust. Guadeloupe, 1867, p. 8, pl. 2, figs. 4 and 5.

Mithrax depressus A. MILNE EDWARDS (part), Crust. Rég. Mex., 1875, p. 96, not pl. 20, figs. 4–4*c* (specimens from Woman Key; 7 cotypes in M. C. Z.).

Diagnosis.—Three antero-lateral branchial spines, the anterior one of which is bifid, and a postero-lateral spine. Rostral sinus distinctly U-shaped, as wide, or nearly as wide, as either horn. Two spines on anterior margin of arm.

Description.—Carapace swollen, considerably wider than long, smooth, except for some low, rounded prominences chiefly toward the outer margin of the branchial region. Gastric tubercles very faint. Front wide; horns short, obtuse, interspace U-shaped, as wide as either horn. Preorbital angles blunt, slightly produced. Basal joint of antenna with two teeth, inner one nearly reaching line of rostrum, the other smaller, on orbital border; besides, the orbit has four tubercles on margin, two superior, much smaller than external or inferior tubercle. Lateral margin armed with five spiniform teeth; the first obtuse, often bifid at extremity; the second longer, sharp and double, curving forward; third and fourth more slender and about the same length; fifth postero-lateral, much smaller, and situated higher up on carapace; in a transverse oblique line with this spine are two tubercles or a spine and a tubercle. Subhepatic region with two tubercles; a number of tubercles, some of them pointed, are on the subbranchial and pterygostomian regions. Arm with four or five spines on upper margin; two on inner margin; and a few tubercles on the upper surface. Wrist smooth; inner margin evenly rounded. Hand smooth; fingers narrowly gaping; a broad, low tooth near the base of the dactylus. In young specimens the tubercles of the carapace are more protuberant.

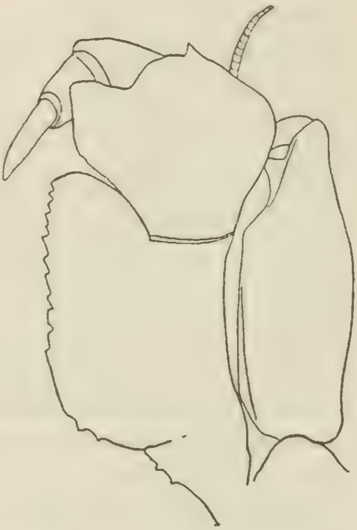

FIG. 124.—MITHRAX HISPIDUS (17962), MAXILLIPED, × 7.6

Color.—Larger specimens nearly uniform deep brownish red or terra cotta above, brighter on chelipeds, darker on legs (due to brown hairs); legs often with brighter red bands at joints; under parts of body mostly white or bluish white; legs red, specked with pale yellow. (Verrill.)

Measurements.—Male, Brazil (Copenhagen Mus.), total length of carapace 102.2, width without spines 124, with spines 146, length of propodus of cheliped 129, width of same 46.3 mm.

Variations.—A male from the Abrolhos Islands (21949) has the first branchial spine unusually developed and divided into two nearly equal spines. The other Brazilian specimens in the collection show the same tendency in a lesser degree. No. 13937, a male, unfortunately without indication of locality, is remarkably rough, all the protuberances of the carapace being well marked, most of them acute; the rostral horns are very narrow and far apart.

Range.—Delaware Bay (Say); off Charleston Harbor, South Carolina (a young male, Gibbes); Georgia (Gibbes); Bahamas, Miami, and Florida Keys to São Paulo, Brazil (Moreira). Bermuda. Shallow water to 30 fathoms.

Material examined.—

Bahamas; 1859; Dr. H. Bryant; 1 fragmentary (53061); from Boston Soc. Nat. Hist.

Green Turtle Cay, Bahamas; E. A. Andrews; 1 male, 1 young (20706).

Miami, Florida; G. M. Gray; 1 male, 1 female (42131).

Cape Florida, Florida; G. Wurdemann; 4 young (1958, M. C. Z.).

Between Salt Pond Key and Stock Island, Florida; 1884; Edward Palmer; 1 female (9282).

Woman Key, Florida; William Stimpson, collector; 7 young, cotypes of *M. depressus* (1960, M. C. Z.); 1 young, labeled "*pleuracanthus*" by A. Milne Edwards (1959, M. C. Z.).

Dry Tortugas, Florida; 1917; W. H. Longley; 1 ovigerous female (returned to sender).

Florida; G. Wurdemann; 1 large male, 2 small, male and female (2123, M. C. Z.).

Florida Keys, Florida; May, 1913; 1 male (46040).

Kingston Harbor, Jamaica: 1893; R. P. Bigelow; 1 male (17962). 1896; F. S. Conant; 1 young female (19586).

Caracas Bay, Curaçao; in sponge; May 3, 1920; C. J. van der Horst; 1 immature male (Amsterdam Mus.).

Off Cape St. Roque, Brazil; lat. 6° 59′ 30″ S.; long. 34° 47′ 00″ W.; 20 fathoms; brk. Sh.; temp. 79° F.; December 16, 1887; station 2758, *Albatross;* 1 young (21950).

Plataforma, Bahia, Brazil; 1876–1877; Richard Rathbun, Hartt Explorations; 1 male (19951), 1 ovigerous female (40606).

Bom Fim, Bahia, Brazil; stone reef; 1876–1877; Richard Rathbun, Hartt Explorations; 1 male (19950).

Porto Seguro, Brazil; Hartt and Copeland, Thayer Exped.; 1 male (1953, M. C. Z.), variety.

Off Abrolhos Islands, Brazil; 30 fathoms; 1872; U. S. C. S. S. *Hassler;* 1 young female (1993, M. C. Z.); "*Mithraculus coronatus*" (A. Milne Edwards).

Abrolhos Islands, Brazil; December 27, 1887; *Albatross;* 1 male (21949), variety.

Rio de Janeiro, Brazil; received December 1, 1863; G. N. Davis; 1 male, 1 female (1954, M. C. Z.), variety.

Brazil; 1 very large male (Copenhagen Mus.).

Bermuda; 1876–1877; G. Brown Goode; 1 male (41523).

Bermuda; T. H. Bean; 1 male, 1 female (21605).

Locality not given: One female, type (Berlin Mus.). One male, unusually rough (13937). From Bureau of Fisheries; 1 female (32237).

MITHRAX (MITHRAX) CARIBBAEUS Rathbun

KNOBBED CRAB

Plates 148 and 149

Mithrax hispidus BENEDICT, Johns Hopkins Univ. Circ., vol. 11, No. 97, Apr., 1892, p. 77.—RATHBUN (part), Proc. U. S. Nat. Mus., vol. 15, 1892, p. 265; Bull. U. S. Fish Comm., vol. 20 for 1900, pt. 2 (1901), p. 67 (specimen from Guanica).

Mithrax depressus RATHBUN (part), Bull. U. S. Fish Comm., vol. 20 for 1900, part 2 (1901), p. 68 (specimens from Hucares).

Mithrax caribbaeus RATHBUN, Proc. Biol. Soc. Washington, vol. 33, 1920, p. 23 (type-locality, St. Thomas; holotype, Cat. No. 50363, U.S.N.M.); Univ. Iowa Studies Nat. Hist., vol. 9, 1921, p. 83, pl. 3.

Diagnosis.—Two parallel, transverse, or nearly transverse rows of three tubercles or tubercles and spines on postero-lateral region of carapace; at least three of these are of good size. Rostral sinus U-shaped, about as wide as each horn. Two stout spines on anterior margin of arm; the proximal one may be bifid. Crenulation or tuberculation of prehensile edges of fingers persisting in the old.

Description.—This species is very closely related to *M. hispidus*, which it approaches in its large size. Rostral horns longer than in *hispidus*, and a little less truncate. Carapace a little narrower, approaching the shape of *pleuracanthus*. This species differs from all its allies in the arrangement of tubercles or tubercles and spines on the postero-lateral region. There is a postero-lateral spine in smaller specimens which becomes a tubercle in older ones. This forms the outermost unit of a transverse row of 3, which is subparallel to another anterior row of 3 tubercles. Anterior margin of arm provided with 2 conical spines; the only exceptions are the holotype which is unusually large and has the proximal spine bifid and the smallest specimen (16192) in which the proximal spine of the right side is missing.

The chelae of the large specimen differ from those of *hispidus* of similar size in having the palm shorter and the fingers longer than in that species. The prehensile edges are crenulated in the gape as well as along the meeting edges, while in *hispidus* the gaping edges are entire except for the large, crenulated tooth of the dactylus.

Measurements.—Male, holotype, total length of carapace 66.3, length on median line 63.5, width without spines 71.3, with spines 78.4, length of propodus of cheliped 69.4, width of same 26 mm.

Variation.—One male specimen from Jamaica (43009) shows a difference in the postero-lateral tubercles of the two sides; on the left side only, the large tubercle obliquely in front of the postero-lateral spine is missing.

Range.—West Indies; northern coast of South America.

Material examined.—

Cuba: On reef flat, between Cayo Hutia and the little Cayo, NE. of Light; 1914; *Tomas Barrera* Exped. (Henderson and Bartsch); 1 young (48729). Bahia Honda; 2 to 12 fathoms; M. Co.; June 4–5, 1914; station 15, *Tomas Barrera* Exped. (Henderson and Bartsch); 1 young female (48728). Havana; May 1, 1871; Ramon N. Forns; 1 male (2099, M. C. Z.).

Jamaica: Montego Bay; July 15, 1910; C. B. Wilson; 1 young (43011). 8 miles E. of Montego Bay; coral reef; July 20, 1910; C. B. Wilson; 2 males (43009). Kingston Harbor; 1896; F. S. Conant; 1 male (50002). Jamaica: T. H. Morgan; 1 male, 1 female (17207). 1910; E. A. Andrews; 1 young (43010).

Haiti: Doctor Weinland; 1 male (328, M. C. Z.). From the bottom of the sea near the Caimites; April 20, 1865; P. R. Uhler; 1 young male (2159, M. C. Z.).

Porto Rico; *Fish Hawk:* Guanica; January 28; 1 male (24209). Hucares; February 13; 2 males (24213).

St. Thomas: December, 1871; U. S. C. S. S. *Hassler;* 1 male, 1 female (1952, M. C. Z.), 1 male, 1 female (exhibition case, M. C. Z.). In harbor, from piles near town; July 7, 1915; C. R. Shoemaker; 1 large male, holotype (50363); received from Carnegie Institution. From piles; 1915; C. R. Shoemaker; 2 young (50367).

Barbados; 1918; Barbados-Antigua Exped. Univ. Iowa; 2 females (Mus. S. U. I.).

Dutch West Indies (exact locality not given); 1905; J. Boeke; 1 male (42963).

Curaçao: 1884; *Albatross;* 1 young female (16192). Caracas Bay; April 19, 1920; C. J. van der Horst; 1 young male (Amsterdam Mus.). Spanish Water; from *Porites porites;* April 13, 1920; C. J. van der Horst; 1 young (56868).

Venezuela: Porlamar, Margarita Island; July 7, 1895; Lieut. Wirt Robinson, U. S. A.; 1 male (18820), "knobbed crab; common."

MITHRAX (MITHRAX) PLEURACANTHUS Stimpson

Plate 150

Mithrax pleuracanthus STIMPSON, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 116 (type-localities, Key West, 2–5 fathoms; Tortugas, 5 to 6 fathoms, and St. Thomas; types not extant).—A. MILNE EDWARDS, Crust. Rég. Mex., 1875, p. 95, pl. 20, figs. 3–3 *f* (Guadeloupe).—RATHBUN, Bull. U. S. Fish Comm., vol. 20 for 1900, pt. 2 (1901), p. 68.

Mithrax depressus A. MILNE EDWARDS (part), Crust. Rég. Mex., 1875, p. 96, pl. 20, figs. 4–4 *c* (type-localities, Guadeloupe and Woman Key; figured cotype from Guadeloupe in Paris Mus.; the cotypes from Woman Key are in M. C. Z. and are young *hispidus*).—RATHBUN, Bull. U. S. Fish Comm., vol. 20 for 1900, pt. 2 (1901), p. 68.

Mithrax hispidus RATHBUN, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 265 (part).

Diagnosis.—Of the four lateral protuberances of the carapace, the last is spiniform, the others tuberculated; second branchial tubercle reduced in size. A small postero-lateral tubercle. Rostral sinus V-shaped in the young, U-shaped in the old.

Description.—The form of the carapace resembles that of the two preceding species; the third or posterior branchial spine is longer than the first, however, and the second spine shorter than the first; there are several tubercles about the base of each lateral spine. Tubercles of carapace well marked. There is a small postero-lateral tubercle; above it and further in there is a large tubercle which is one of a row of two arranged almost transversely. Rostral horns shorter and wider than in *hispidus* or *caribbaeus*, and interspace narrower and inclined toward the triangular; in the young, always triangular. The arm of the cheliped bears usually either a simple spine or a spine with a tubercle on its proximal slope.

Color.—Carapace yellowish white, with blotches of bright red; the 2 largest red spots over branchial areas; a median spot on cardiac area; a pair situated farther back; another small pair behind orbits, another beneath orbits; legs yellowish white, blotched or barred with red; chelae light red with pale tips. (Verrill, for *depressus*.)

Measurements.—Largest specimen, male (46815), total length of carapace 36.3, width without spines 38.2, with spines 43, length of propodus of cheliped 31.8, width of same 11.8 mm.

Variations.—In the young the rostral horns are wider behind and flatter than in the adult; in one of the largest males (46791), the rostral sinus is rounded behind so that it appears almost U-shaped.

In a small ovigerous female (50364), the large tubercle above the postero-lateral margin has a sharp point, giving it a spinous appearance, but its position is too high up to correspond to the spine of *hispidus*.

Range.—From North Carolina and the Bahamas to Gulf of Mexico and Caribbean Sea. Shallow water to 28 fathoms.

Material examined.—See table, pages 412-417.

Material examined of Mithrax pleuracanthus

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
North Carolina:	° ′ ″	° ′ ″			°C						
Fishing grounds, off Beaufort.	34 20 00 Course E. one mile	76 49 00	13.5	Co. S. Sh.		Sept. 6, 1913	7943	*Fish Hawk*	2♂ 4♀	51103	
Do	Course NE. from buoy, 1 mile.		15.5	smooth		Aug. 12, 1914	8217	do	1♀	51016	
Do								do	3	51084	
Off Cape Fear	33 42 45	77 31 00	17	S. P.		Oct. 20, 1885	2616	*Albatross*	4 y	11223	
Do	33 37 30	77 36 30	14	crs. yl. S. brk. Sh.		do	2617	do	5 y	11221	
Do	33 37 15	77 35 30	17	crs. yl. S. brk. Sh.		do	2618	do	7	11207	
Do	33 38 00	77 36 00	15	crs. yl. S. brk. Sh. rotten Co.		do	2619	do	1♂	11230	
South Carolina: Blackfish Banks, off Charleston.						Mar. 8, 1880		R. E. Earll	2♂ 1 brk	5760	
Bahamas: Green Cay						1903		B. A. Bean	1 y	31058	From Geogr. Soc., Baltimore.
Do						June 30, 1903		Bean and Riley	2 y	31059	Do.
Florida:											
Indian Key								H. Hemphill	1♂	15076	
Lower Metacumbe Key			(1)	Grass		1885		do	1♂	15077	
Key Vaccas			(2)					do	1♀	15806	
Channel Key Lake	1¾ miles E. of Channel Key.		*Feet* 10	S. G. R.		Jan. 29, 1903	7442	*Fish Hawk*	1♀	46803	
Hawk Channel	1¾ miles S. ¾ E. of Pigeon Key.		18	S. G.	23.5	Jan. 27, 1903	7426	do	1 y	46863	
Do	3⅛ miles N. ¾ E. of Sombrero Lt.		11.5	rky		do	7427	do	2♀ (1 ovig.) 1 y	46801	
Do	½ mile SE. by S. of SE. end of Duck Key.		14	rky		do	7429	do	4♂ 4♀ (2 ovig.)	46802	A small male was found in a finger sponge.
Do	1½ miles E. of Tea Table Key.		*Fathoms* 2.5	barry		Feb. 19, 1903	7466	do	1 ovig. ♀	46804	
Off Duck Key	Duck Key, N., 1.25 miles.		2.75	Co.S.Grass Sh.		Dec. 20, 1912	4	do	2♂	50444	
Grecian Shoals	4¼ miles W. by N. of Elbow Reef Beacon.		2.75			Feb. 19, 1903	7467	do	1♀ y	46864	

Summerland Keys						Dec. 6, 1906		B. A. Bean	1♂	33135	
Off Key West, inside the reef.	E. Martello Tower to Key West Light, 36°; to Sand Key Light, 52° 36′.		5.25	co. S. G	20	Feb. 13, 1902	7277	*Fish Hawk*	7 y	46792	
Do	Key West Light to E. Channel Bar Buoy, 71° 53′; to Beacon "A," 74° 46′.		5.25	co. S. G	20	do	7278	do	1♂ 6 y 1 y	46793 46862	
Key West								C. T. Maynard	2♂ 1♀	53052	From Boston Soc. Nat. Hist.
Gulf of Mexico, off Northwest Channel.	24 42 50	81 53 38	7	Co	19	Feb. 24, 1902	7288	*Fish Hawk*	1♀	46794	
Do	24 42 30	81 55 52	7.25	Co	20	do	7293	do	1♂ 2♀	28784 46795	
West Channel, entrance to Key West.	Midchannel Buoy bearing W. by S. ¼ S., distant ½ mile.		7.75	co. S	20	Feb. 13, 1902	7271	do	1 y	46861	
Off Boca Grande	Boca Grande Light, N.NE. ⅜ E., 24½ miles to NE. ¼ N., 20 miles.		12.5		°F 68.5	Jan. 2, 1913	7796	do	1 y. ♀	56223	
Eastern Dry Rocks						1884		Edward Palmer	1♀	13853	
Dry Tortugas			16					J. B. Henderson	1 y. ♂	50391	
Off Cape Sable	25 00 55	81 22 15	4	rky		Dec. 19, 1902	7372	*Fish Hawk*	1♂	46842	
Do	25 01 00	81 25 30	4.5	speckled S. Sh		do	7373	do	1♂ 1 ovig. ♀	46798	
Do	25 07 05	81 25 50	4.5	gy. S. G		Dec. 18, 1902	7360	do	2 ovig. ♀	46796	
Do	24 58 05	81 28 30	5	rky		Dec. 19, 1902	7375	do	1♂ 1♀	46799	
Do	25 07 10	81 29 00	5	rky. Co		Dec. 18, 1902	7361	do	2♂ 3 ovig ♀	46797	
Do	E. end of Sawyer Key bearing S. ¼ W., 2¼ miles.		4.75	rky		Dec. 22, 1902	7390	do	2♂ 5♀ 6 y	46800	
Do						Dec. 17, 1902		do	1 ovig. ♀	46790	
North of Dry Tortugas	25 04 30	82 59 15	26	fne. wh. S. brk. Sh.		Mar. 19, 1885	2114	*Albatross*	1 y. ♀	18918	
Off Cape Romano	25 50 15	82 41 45	21	sdy	°C 20	Apr. 2, 1901	7124	*Fish Hawk*	1♂ 1 y	25590	
West of Marco	26 00 00	82 57 30	24	fne. S. bk. Sp. brk. Sh.		Mar. 19, 1885	2413	*Albatross*	4 y	15080	
Marco								H. Hemphill	2♂ 1♀	6983	
Oyster Bay								do	1 y. ♀	15079	
Off Charlotte Harbor	26 33 00	83 10 00	28	sdy	19.1	Apr. 2, 1901	7123	*Fish Hawk*	4♂ 2♀	25589	
Sarasota Bay									1♂	53063	From Boston Soc. Nat. Hist.; J. S. Kingsley collection.
Highland section	27 49 30	83 00 00	7	Co. hrd	14.6	Jan. 28, 1902	7257	*Fish Hawk*	4♂ 1♀	46791	
Do	27 55 30	82 51 30	3	hrd. S. brk. Sh.	15.8	do	7249	do	1 y	46860	
Do	27 55 30	83 11 30	13	Co. R	15.2	do	7253	do	3♂	46841	

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[1] Below low tide.

[2] Low tide.

Material examined of Mithrax pleuracanthus—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°C						
Florida—Continued.											
Anclote section	Anclote Light bearing E. ⅛ N., distant 21½ miles.		12.5	R. Co. S	17.2	Mar. 28, 1901	7106	*Fish Hawk*	1♂ 2♀ 3 y	25588	
Do	28 01 30	83 08 00	11	rky	13.5	Jan. 23, 1902	7234	do	4♂ 7♀	46839	
Do	28 08 00	82 57 00	5.5	sdy. brk. Sh	13	do	7229	do	1 y	46858	
Do	28 08 30	83 10 00	10	rky. C	13.5	do	7231	do	1♂ 1♀	46838	
Do	28 19 30	83 01 00	6.25	rky. G	12.5	Jan. 24, 1902	7239	do	1♀	46832	
Do	28 19 45	83 06 30	8.5	rky. G	13	do	7240	do	1 y	46859	
Do	28 20 15	83 12 15	10.25	S. G	13.5	do	7241	do	1♂	46840	
Do						do	(3)	do	1♂ 1♀	46973	
					°F						
Do	Anclote Light, E. ⅛ S., 14 miles.		8.5	Co	63.95	Jan. 11, 1913	20	do	2♂ 1♀ 1 y	50445	
					°C						
St. Martins section	28 26 00	83 02 30	7.5	rky. Co	13	Jan. 15, 1902	7215	do	1♂ 2♀	46830	
Do	28 26 30	83 08 00	10	sdy. grassy	13.6	do	7216	do	1♂ 2 y	46831	
Do	28 34 30	83 15 45	7.5	rky. sdy	13	do	7220	do	1 y	46855	
Do	28 34 45	83 08 00	5.75	Co. R. G	12.5	do	7221	do	7♂ 6♀	46836	
Do	28 35 30	83 02 30	3	sdy. grassy	12	do	7222	do	1 y ♀	54779	
Do	28 41 00	83 15 15	8.5	rky	13.5	Jan. 17, 1902	7226	do	2♂ 1♀ 1 y	46837	
Do	28 42 30	83 09 45	7	S. brk. Sh. G	12.2	do	7225	do	1 y	46857	
Do	28 45 30	83 00 00	5	S. brk. Sh. G	11.7	do	7224	do	1 y	46856	
Do	28 47 30	84 37 00	24	Co. brk. Sh		Mar. 15, 1885	2407	*Albatross*	2 y	15805	
Off northwest end St. Martins Reef.	Near 28 50 00	Near 83 00 00				1887		Lieut. J. F. Moser, U. S. N.	7 y	13044	
North Key section	28 47 45	83 28 00	11.5	R. Sh	17	Nov. 28, 1901	7186	*Fish Hawk*	1 y	54778	
Do	28 47 55	83 16 30	8	rky. grassy	17	Dec. 9, 1901	7211	do	2♂ 2♀ 2 y	46974	
Do	28 50 15	83 23 15	10	R. Co. Sh	17	Nov. 28, 1901	7187	do	1♂	46827	
Do	28 52 45	83 07 00	5.75	rky	16.1	Dec. 9, 1901	7209	do	3♂ 8♀ 4 y	46961	
Do	28 54 00	83 30 00	11	R. Co. S	17	Nov. 28, 1901	7185	do	1 y	46852	
Do	28 55 00	83 28 10	10.5	R. Co	17	do	7184	do	2 y	54776	
			Feet								
Do	28 56 00	82 55 00	19			Apr. 3, 1887		Lieut. J. F. Moser, U. S. N.	1♂	13063	

			Fathoms								
Do	28 57 30	82 58 00	3	rky	15.5	Dec. 9, 1901	7207	*Fish Hawk*	2 y	46854	
Do	29 00 00	83 18 45	5.75	rky. Co	15.3	Nov. 28, 1901	7182	do	1 ♀	46826	
Do	29 02 30	83 14 00	4.25	sdy	14.8	do	7181	do	2 ♂	46825	
Cedar Keys						Feb., 1887		Lieut. J. F. Moser, U. S. N., U. S. C. S. S. *Bache*.	1 y. ♂	12474	
					° F						
Off Cedar Keys	Cedar Keys Light, N. ¾ E., 21¾ miles.		5.75	Co	63.45	Jan. 11, 1913	21	*Fish Hawk*	1 ♀	50463	Encrusted with bryozoan and serpulid.
					° C						
Pepperfish Key section	29 13 15	83 32 30	7.25	rky	17.2	Nov. 21, 1901	7165	do	1 y	46851	
Do	29 18 00	83 37 00	8	rky	18	do	7161	do	4 ♂ 6 ♀ 6 y	46824	
Do	29 19 30	83 46 00	10	S. Co	18.3	Nov. 20, 1901	7158	do	2 ♀ 1 y	46822	
Do	29 21 00	83 32 00	6.75	rky	16.7	Nov. 21, 1901	7160	do	1 ♂ 3 y	46823	
Do	29 30 50	83 31 40	3.25	sdy	22	Nov. 5, 1901	7145	do	1 y	46850	
Do	29 32 10	83 29 50	3	sdy	21.8	do	7144	do	1 y	46849	
Deadmans Bay section	29 24 30	83 49 30	10	R. Co	17	Dec. 6, 1901	7202	do	1 y	46853	
Do	29 32 00	83 58 30	10.5	Co	22.5	Nov. 7, 1901	7154	do	1 ♀	46821	
Do	29 35 20	83 56 00	9.5	S. Co	23	do	7153	do	3 ♂ 3 ♀	46820	
Do	29 39 30	83 53 10	7.5	S. Co	21.5	do	7152	do	2 ♂ 2 ♀ 2 y	46819	
Do	29 43 40	83 49 45	5.25	Co	20.5	do	7151	do	1 ♂ 3 ♀ 1 y	46818	
Do	29 48 05	83 46 40	4	Co	19.5	do	7150	do	1 ♂	46817	
Aucilla section	29 34 00	84 07 20	10.5	R. Co	17.6	Dec. 5, 1901	7195	do	1 ♂ 3 y	46828	
Do	29 38 30	84 04 00	9.5	R. Co	16.5	do	7196	do	1 ♂	46829	
Do	29 44 09	84 06 30	7	R. Co	16.5	do	7193	do	4 ♂ 2 ♀	46835	
Do	29 45 48	83 57 30	7	S. Co	21	Nov. 6, 1901	7149	do	1 ♂	46816	
Do	29 48 10	83 55 15	5	S. Co	21	do	7148	do	1 ♂ 2 ♀ 3 y	46815	
Do	29 49 00	84 06 15	6	R. Co	15	Dec. 5, 1901	7192	do	2 ♂ 3 ♀ 3 y	46834	
Do	29 52 10	83 51 47	3	S. Co	20	Nov. 6, 1901	7147	do	2 ♂	46814	
Do	29 54 00	84 06 00	4.5	R. Co. Sh	14	Dec. 5, 1901	7191	do	1 ♂	46833	
					° F						
Off Carrabelle	Carrabelle Light, N. by W., 14⅔ miles.		10		60.2	Jan. 16, 1913	21	do	1 ♂	50446	
Do	Carrabelle Light, N W. ½ N., 16 miles.		10.25		60.2	do	23	do	2 ♂	50447	
Pensacola								Silas Stearns	1 ♂	4501	Received May 31, 1882.
Do								do	1 ♂ 1 ♀	9372	From fish stomach.
Southern coast, United States.						1880		U. S. Fish Comm.	3 ♂ 4 ♀	5780	
Yucatan Channel: North of Cape Catoche, Mexico.	22 08 30	86 53 30	25	Co. S		Jan. 30, 1884	2362	*Albatross*	1 y	55782	

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[3] Station 7241 or 7242.

Material examined of Mithrax pleuracanthus—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°*F*						
Cuba:											
Bahia Honda						June 7, 1914		*Tomas Barrera* Exped.; Henderson and Bartsch.	1♂ 2♀	48672	
On reef Lavesos Italienos, opposite Cayo Lavesos.			2–3	Co. S. R.		June 2, 1914	14	do	2 y	48724	
Cayo Arenas			2			May 12, 1914	3	do	1♂ 2 y	48725	
Porto Rico:											
Off Puerto Real	Punta Guaniquilla, S. ¼ E., 2 miles.		8.5	Co. S		Jan. 25, 1899	6074	*Fish Hawk*	1 y	24128	
Off Vieques Island	Point Mula Lighthouse, E. ½ N., 11¼ miles.		6	Co		Feb. 8, 1899	6096	do	6 y	24130	
Do	Point Mula Lighthouse, S. SW., ⅜ W., 5¾ miles.		14	Co. S		do	6085	do	1 y 1♂ 3 y	24127 24169	
Off Culebra Island	Culebritas Lighthouse, N. NE., 5¾ miles.		16	Co		do	6090	do	1 y. ♀	24124	
Do	Culebritas Lighthouse, NE., 5¼ miles.		15	Co		do	6093	do	1 y. ♂	24125	
Off Humacao	Village of Hucares, N. ½ W., 3 miles.		12.5	Co		do	6098	do	2 y 1 y	24129 24168	
Do	Village of Hucares, NW. ¾ W., 2¼ miles.		9.5	Co		do	6099	do	1 y	24123	
St. Thomas						1884		*Albatross*	28	7651	
South side Buck Island, 3 miles from St. Thomas; from fish pot.						July 6, 1915		C. R. Shoemaker	3♂ 2♀	50366	From Carnegie Institution.
South of Buck Island, about 3 miles from St. Thomas; from fish pot.						July 8, 1915		do	2♂ 5♀ (1 ovig.)	50365	Do.
Buck Island						July 30, 1915		do	1 ovig. ♀	50364	Do.
Off St. Thomas	Sail Rock, W. by N. ½ N., 6 miles.		20–23	Co		Feb. 6, 1899	6079	*Fish Hawk*	1 y	24122	
Do	Sail Rock, NW. ½ W., 4 miles.		20	Co		do	6080	do	1 y. ♀	24126	

St. Martin:										
Groote Bai			½	sdy		Sept. 1, 1905		J. Boeke	2 y. 1 y.	Leiden Mus. 42975.
Simsons Bay Lagoon			(4)	Co		Sept. 7, 1905		do	1 ♂	Leiden Mus. 16193.
Caribbean Sea: Old Providence.						1884		*Albatross*	1 y. ♂	
Curaçao:										
St. Joris Bay			1	rky		Apr. 3, 1905		J. Boeke	2 y.	Leiden Mus.
Rifwater			1	muddy		July 26, 1905		do	1 ♂	do
Do			(4)	muddy		Sept. 6, 1905		do	1 ♀	do

[4] Shallow.

MITHRAX (MITHRAX) TORTUGAE Rathbun

Plate 147, fig. 2

Mithrax tortugae Rathbun, Proc. Biol. Soc. Washington, vol. 33, 1920, p. 23 (type-locality, Tortugas; type, Cat. No. 50442, U.S.N.M.).

Diagnosis.—No spine nor tubercle on postero-lateral margin, but a tubercle above the margin. Rostral sinus V-shaped, horns very wide. Two tubercles or blunt spines on anterior margin of arm.

Description.—Carapace wider than in the three preceding species; the marginal hepatic and the prominent first branchial lobe rectangular, their anterior margins transverse, their posterior margins longitudinal, the branchial lobe having a very short hooked spine at the angle. Second branchial lobe or spine low, conical; third spine slender, hooked; from it a line of two tubercles runs obliquely transversely backward on the carapace. No spine nor tubercle on the true postero-lateral margin. Rostral horns short, broad, subtruncate; sinus V-shaped.

Two blunt spines or tubercles on anterior or inner margin of arm, the distal one larger. Tubercles of wrist very low.

Otherwise as in *M. pleuracanthus* which it most nearly resembles.

Color.—A specimen preserved in formalin has regular patches on the carapace which are finely dotted with dull crimson. Chelipeds closely spotted and finely mottled with the same. Merus of legs incompletely banded with a brighter crimson, with some small spots of the same shade on the succeeding segments especially at articulations.

Measurements.—Female, holotype, total length of carapace 19.7, width without spines 22.1, with spines 24.3 mm.

Range.—Bahamas; Florida Keys; Curaçao.

Material examined.—

Abaco Island, Bahamas; 1886; *Albatross;* 1 young female (16302).

Dry Tortugas, Florida; W. H. Longley; 1 immature female, holotype (50442).

Caracas Bay, Curaçao; in coral; April 2, 1920; C. J. van der Horst; 1 young (Amsterdam Mus.).

MITHRAX (MITHRAX) TUBERCULATUS Stimpson

Plate 151, figs. 1 and 2

> *Mithrax tuberculatus* Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 189 (type-locality, Cape St. Lucas, Lower California; cotypes, Cat. No. 1228, M. C. Z., and Cat. No. 23178, U.S.N.M.). Probably not *M. tuberculatus* Aurivillius, K. Svenska Vet.-Akad. Handl., Stockholm, vol. 23, 1889, p. 57 (St. Barthelemy, 1 meter).

Diagnosis.—Two rounded lobes and a spine on antero-lateral margin. Carapace very granulate. Two or three tubercles on anterior margin of arm.

Description.—Carapace covered with granulate tubercles; interspaces smooth (non-granulate), punctate; marginal projections granulate. Rostral horns short, broader than long, truncate, extremity granulate, interspace nearly V-shaped. Preorbital lobe subrectangular, followed by two small, supra-orbital tubercles; outer orbital tooth small, projecting outward, little advanced. Antero-lateral margin furnished with two large lobes, the first hepatic, the second branchial and more prominent, and a curved spine at the lateral angle; a much smaller postero-lateral spine. Of the dorsal tubercles two pairs are behind the rostral horns, followed by a transverse row of 5; about 7 large tubercles on the branchial region, and 2 side by side on the intestinal region. Small, low tubercles on the cardiac and mesogastric regions, and single granules on the posterior and postero-lateral margins.

Basal antennal article subtriangular, with a broad, curved, pointed, apical tooth, less advanced than the rostrum, and a small tooth on outer margin. Outside of this there is another suborbital tooth on the carapace. Pterygostomian ridge tuberculate.

Merus of cheliped tuberculate, 2 or 3 tubercles on inner edge, 5 on outer edge. Carpus granulate. Hand smooth. Fingers little gaping, feebly crenulate and denticulate within, but with a tooth on the dactylus in old specimens. Legs thick, subcylindrical, nearly naked, short-spinous or granulate above in double series, tomentose below.

Color.—Dried specimens are cream-colored, mottled with carmine. In old specimens the carmine predominates. (Stimpson.)

Measurements.—Type male, length of carapace 34.8, greatest width 42.4 mm. (Stimpson.) Male (Panama), total length 13.3, total width 15 mm.

Range.—West coast of Mexico (from Cape St. Lucas) to Panama.

Material examined.—

Cape St. Lucas; John Xantus, collector; received from Mus. Comp. Zoöl.; two males, one female, cotypes (23178), 13 males, 13 females (1 ovig.), cotypes (1228, M. C. Z.).

Panama; Captain Field; 1 male (Phila. Acad.).

MITHRAX (MITHRAX) SINENSIS Rathbun

Plate 151, figs. 3 and 4; plate 260

Mithrax sinensis Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 266, pl. 38, fig. 2 (type-locality, Gulf of California, 17 fathoms, *Albatross* station 3002; holotype, Cat. No. 16065, U. S. N. M.).

Diagnosis.—Three spines on basal segment of antenna. Three antero-lateral branchial prominences, subacute, scarcely spinous. Three or four tubercles on anterior margin of arm.

Description.—Carapace ovate, a little longer than broad, covered with low tubercles some of which bear one or two granules; cervical and cardiac groove deep. Edge of marginal prominences granulate. Rostral lobes short, broad, arcuate, separated by a narrow U-shaped sinus. Besides the preorbital lobe, the orbit has 2 small teeth above, a well-marked outer lobe and 2 strong teeth below, outside the antenna. Antero-lateral protuberances behind the orbit 4, the last one at the lateral angle, simple and acute, the others lobiform with subacute tips, but subdivided into 2 or 3; the first or hepatic lobe is the most prominent, the next lobe is the widest. A postlateral tubercle is present. In a dorsal view, a row of subbranchial spines is partially visible.

Basal antennal joint tridentate, all the teeth visible from above, the 2 outer teeth subequal, the one at the outer angle well behind the rostrum, the tooth at base of second joint small. Two subhepatic granules.

Chelipeds of adult male much longer and heavier than legs. Merus tuberculous and spinous, 3 or 4 spines along the inner margin, 5 or 6 along the outer, 2 rows of spines or tubercles on upper surface, one row on outer surface. Carpus granulate. Manus smooth, inflated. Fingers short, stout, gape of male short, a small, acute tooth near base of dactyl, both fingers crenulate, the propodal finger throughout, the dactyl from tip to tooth. Legs furnished with fine, scattered hairs and above, with spines.

Color.—In alcohol reddish; hands of a deeper hue.

Measurements.—Male (21951), length of carapace 13, width between tips of lateral spines 12.4, width across subbranchial regions 12.9 mm.

Range.—Gulf of California. Depth, 7 to 17 fathoms.

Material examined.—See table, page 420.

MITHRAX (MITHRAX) LAEVIMANUS Desbonne

Plate 261

Mithrax laevimanus Desbonne, in Desbonne and Schramm, Crust. Guadeloupe, 1867, p. 7, pl. 1, figs. 1 and 2 (type-locality, Guadeloupe; cotype in Paris Mus.).

Mithrax lævimanus A. Milne Edwards, Crust. Rég. Mex., 1875, p. 94, pl. 21, figs. 2–2 *b*.

Material examined of Mithrax sinensis

Locality	Bearings						Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.			Longitude W.											
	°	′	″	°	′	″									
Gulf of California, Mexico: San Esteban Island										1911		*Albatross*	1♂	55760	
Off San José Island, Lower California.	25	02	15	110	43	30	17	S. Sh.		Mar. 17, 1889	3002	do	1♂	16065	Holotype.
Off Santa Cruz, Lower California.	24	22	30	110	19	30	8	bfk. Sh		Apr. 30, 1888	2824	do	3♂ 3♀	21951	
Do	24	22	15	110	19	15	7	brk. Co		do	2825	do	1♀	21952	
Off Cerralvo Island, Lower California.	24	12	00	109	55	00	9.5	Sh		do	2826	do	1♂	21953	
Do	24	11	45	109	55	00	10	Sh		do	2827	do	1♂ 1♀	21954	
Do	24	11	30	109	55	00	10	Sh		do	2828	do	2♂ 2♀	21955	

Diagnosis.—Three spines on basal article of antenna. Lateral spines of carapace simple. A tubercle on inner margin of wrist.

Description.—Resembles *M. hispidus;* the carapace smooth, and having only a few rounded prominences, but narrower; the front also is narrower and much more produced. Preorbital projections rounded. The basal article of antenna bears three blunt spines, one below insertion of next article, one stronger at antero-external angle, the third equally large at antero-internal angle. Orbital border with only three tubercles. Lateral margins armed with five almost cylindrical spines, which are simple and directed almost forward; the first and fifth are smallest; the fifth is post-lateral. Three strong projections on branchial regions. Wrist with a large tubercle on inner margin; otherwise the feet resemble those of *M. hispidus.* Sternal plastron deeply hollowed anteriorly for seventh abdominal segment; sixth abdominal segment very wide in its anterior part. Merus of outer maxillipeds longer and much less deeply cut at its inner angle than in *M. hispidus.*

Color.—Carapace a violet brown; claws and feet spotted with a wine-colored violet (Desbonne). The spots persist indefinitely in the preserved specimen.

Measurements.—Male, type, length of carapace with rostrum 71, width without spines 76; distance across front and orbits 22 mm. (Desbonne).

Range.—Porto Rico; Guadeloupe.

Material examined.—

Porto Rico; Gundlach, collector; 1 small male (Cat. No. 4790, Berlin Mus.).

Guadeloupe; 1 male (Paris Mus.).

MITHRAX(?) LEUCOMELAS Desbonne

Mithrax leucomelas DESBONNE, in Desbonne and Schramm, Crust. Guadeloupe, 1867, p. 11 (type-locality, Guadeloupe; type not extant).

Diagnosis.—Carapace, one-fourth longer than wide, without spines or lateral angle.

Description (translated from Desbonne).—Carapace depressed, rugose, without spines, a little longer than wide, subtriangular; anterolateral borders slightly denticulated; lateral and posterior angles of the carapace rounded, not spinous. Rostrum very small, horizontal, bifid. Orbits directed forward and outward, a spine on the outer border and two on the inner border (one superior and the other inferior). The eyes fold in a postforaminal cavity. The inner antennae are directed forward and separated by a spiniform prolongation. The outer antennae have the first segment well developed, fused with the front and forming part of the walls of the orbits. Abdomen composed of seven articles in both sexes.

Chelipeds equal, a little more developed than the legs and one and one-fourth times as long as the carapace; naked and smooth. Fingers broad, gaping, ending in a deep spoon with sharp and denticulated edges and a bunch of hairs at the bottom. First leg same length as cheliped, the other three legs successively diminish in length; dactyls with 4 or 5 spines below.

Color.—White and black in large spots.

Measurements.—Type (sex not given), length of carapace 20, width 16 mm.

Habitat.—On the rocky shores of Guadeloupe; found at Moule (rare).

Remarks.—Nothing is known of this species except the original description by Desbonne. Schramm himself could not find the specimens described.

MITHRAX, species indeterminable

Locality.—Valparaiso Bay, Chile; 25 fathoms; C. E. Porter, collector; one specimen in too poor condition for determination or description, the genus alone being certain. Specimen returned to sender.

Subgenus MITHRACULUS

Carapace with conspicuous, smooth, oblique, branchial sulci. Rostral horns very short, shorter than wide, truncate. Minor teeth of orbit tuberculiform, inconspicuous.

MITHRAX (MITHRACULUS) SCULPTUS (Lamarck)

Plate 152

Cancellus rugosus, pedibus hirtis Petiver, Pteri-graphia Americana, 1715, No. 368, pl. 20, fig. 6.

Araneus marinus Seba, Thesaurus, vol. 3, 1758, p. 49, pl. 19, figs. 22 and 23.

Maia sculpta Lamarck, Hist. Anim. sans Vert., vol. 5, 1818, p. 242 (type-locality not given; type in Paris Mus.?); ed. 2, 1838, p. 436.

Mithrax sculptus Milne Edwards, Mag. de Zool., vol. 2, 1832, pl. 5; Hist. Nat. Crust., vol. 1, 1834, p. 322.—Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 271, and synonymy.—Gundlach and Torralbas, An. Acad. Habana, vol. 36, 1899 (1900), p. 330, text-fig.; reprint, 1917, p. 17, pl. [4], fig. 9.

Mithraculus coronatus White, List Crust. Brit. Mus., 1847, p. 7 (part); not *Cancer coronatus* Herbst.

Mithrax minutus Saussure, Mém. Soc. Phys. de Genève, vol. 14, 1857, p. 425, pl. 1, fig. 1 (type-locality, Antilles; type in Geneva Mus.).

Mithraculus sculptus Stimpson, Amer. Journ. Sci., vol. 29, 1860, p. 132.—A. Milne Edwards, Crust. Rég. Mex., 1875, p. 105, pl. 20, fig. 2.

Diagnosis.—Posterior two-thirds of carapace nodose. Four antero-lateral lobes. Wrist smooth, non-dentate. Color greenish or bluish.

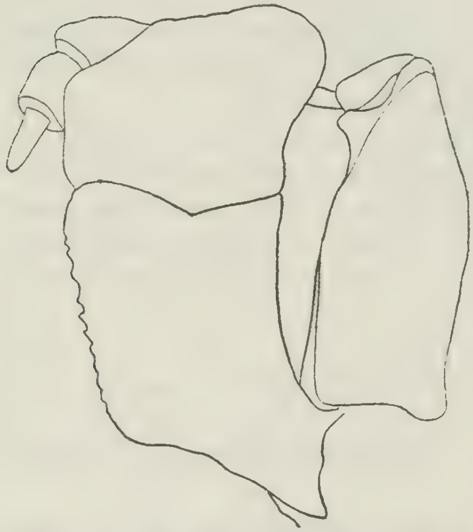

Fig. 125.—Mithrax (Mithraculus) sculptus, male (14058), maxilliped, × 11.8

Description.—Carapace broader than long, with arcuate margins. Front broad, little advanced, formed of two shallow lobes separated by a narrow notch. Inner orbital angles obtuse and slightly produced. The orbital border bears three tubercles—one small superior, one external, the other inferior. Basal article of antenna very wide, much expanded outwardly, forming a part of floor of orbit; its antero-external angle is tuberculiform and scarcely more advanced than superior inner orbital angle. Posterior two-thirds of the carapace nodose; branchial regions crossed by oblique sulci, the intervening elevations being broken up into irregular lobulations. Antero-lateral margins cut into four rounded lobes, which in the young are more or less pointed. Carapace and chelipeds naked and shining.

Chelipeds enlarged in the male; the arm has two spiniform tubercles in front; carpus smooth and round; hand compressed; dactylus as long as palm; fingers widely gaping, each provided with a large tooth, that is near the base in the dactylus, but in the middle of the gape in the pollex; in the female the fingers gape less and are without large teeth; tips widely spooned. Ambulatory legs somewhat spinous and covered with a brush-like coating of stout and slender setae.

Color.—Olive green, sage green, or bluish green; tips of fingers and legs white. "Back pale olive green, growing darker forward; claws and under part of body rich uniform olive green. Tips of pincers whitish. Raised places on back darker than the depressions. Legs covered with whitish mud, hairs yellowish." (Henderson).

Measurements.—Male (15208), entire length 23, width 26.4 mm.

Habitat.—On sand, shell, grass and mud bottom. Abundant on coral reefs. Under stones at low tide.

Range.—Bahamas and Miami, Florida, to the Abrolhos Islands, Brazil; to a depth of 30 fathoms.

Material examined.—

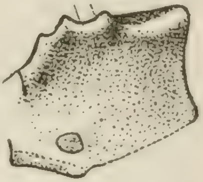

FIG. 126.—MITHRAX (MITHRACULUS) SCULPTUS, MALE (14058), BASAL ANTENNAL ARTICLE, × 5

Bahamas; 1859; Dr. H. Bryant; 1 ovigerous female (53069), received from Boston Society of Natural History.

Green Turtle Cay, Bahamas; E. A. Andrews; 2 males (20709).

Abaco Island, Bahamas; 1886; *Albatross;* 1 male (16304).

New Providence Island, Bahamas; 1886; *Albatross;* 7 males, 4 females (16310).

Nassau, Bahamas; 1886; *Albatross;* 1 young (11412).

Miami, Florida; G. M. Gray; 1 male (42133).

Cape Florida, Florida; 1884; Edward Palmer; 4 males, 5 females, 2 young (13892).

Biscayne Bay, Florida; 1901; J. E. Benedict; 6 specimens (25565).

Ragged Key, Florida; on coral reef; May, 1913; J. B. Henderson; 1 male, 1 female (46047).

Key Largo, Florida; 1 fathom; grass; H. Hemphill; 1 male (14050).

Rodriguez Creek, Florida; 1884; Edward Palmer; 2 males, 1 female (13900).

Indian Key, Florida; H. Hemphill; 10 males, 3 females, 1 young (14058).

Key Vaccas, Florida; on banks, low tide; H. Hemphill; 1 male (15087).

Knights Key, Florida; H. Hemphill; 8 males, 2 females (15085).

Off Sombrero, Florida; April 2; William Stimpson; 1 male, 3 females (young) (1987, M. C. Z.); "*M. coronatus*" (A. Milne Edwards).

Big Pine Key, Florida; H. Hemphill; 1 male (15086).

Bird Key, Florida; April 8, 1889; *Grampus;* 13 males, 18 females (15208).

Key West, Florida: H. Hemphill; 150 specimens (13816). Low tide, under stones; H. Hemphill; 1 ovigerous female (46966). 1884;

Albatross; 1 male, 1 female (16303). J. S. Kingsley collection: 5 males, 5 females (53058); received from Boston Society of Natural History. William Stimpson; 1 young male (1989, M. C. Z.).

Woman Key, Florida; William Stimpson: 2 females (1970, M. C. Z.). 2 males, 1 female (young) (1988, M. C. Z.); "*M. coronatus*" (A. Milne Edwards).

Gulf Stream, Florida; dredged, 15 fathoms; April 19; William Stimpson; 1 young male (1986, M. C. Z.); "*M. coronatus*" (A. Milne Edwards).

Sand Key Reef, Florida; May, 1911; J. B. Henderson; 1 male (46967).

Bush Key, Tortugas; June, 1921; Paul Bartsch; 8 males, 8 females (7 ovigerous), 1 young (56217).

Dry Tortugas, Florida: 1884; Edward Palmer; 9 males, 18 females (13891), 25 specimens (13564). J. S. Kingsley collection; 2 males, 1 female, 3 young (53066); received from Boston Society of Natural History. Growing on corals in moat; T. W. Vaughan; 1 male (50004).

Dry Tortugas Reefs, Florida; J. B. Henderson; 1 female (46874), 2 males, 4 ovigerous females (46968).

Belize, British Honduras; Harry J. Huwe, S. J.; 1 male (50952).

Spanish Caye, British Honduras; common among the corals; W. A. Stanton, S. J.; 1 male, 1 female (22597).

Swan Islands, Caribbean Sea; February, 1887; C. H. Townsend; 2 males, 1 female (13984).

Old Providence Island, Caribbean Sea; 1884; *Albatross;* 1 male, 1 female (16199).

Cuba; 1914; *Tomas Barrera* Exped. (Henderson and Bartsch): Cape San Antonio; May 25; 1 male (48704). Reef, Cape San Antonio; caught by copper sulphating of reef; 1 specimen (48705). Ensenada de Cajon, off Cape San Antonio; May 22; 1 female (48703). Reef Lavesos, opposite Cayo Lavesos; coral sand and rock; June 2; station 14; 3 males, 1 female (48706). Bahia Honda; 2 to 12 fathoms; mud and coral; June 4; station 15; 1 male (destroyed). Cabañas; June 8 and 9; station 16: Sand, shell, grass to mud bottom; 10 males, 3 females (48662); caught by copper sulphating on reef; 1 male (48767). Esperanza; May 11; stations 1 and 2; 7 males, 23 females (48656).

Mariano beach, Havana, Cuba; M. S. Roig; 1 male (53344).

Jamaica: March 1–11, 1884; *Albatross;* 4 males, 1 female (15821). 1910; E. A. Andrews; 2 males (43067).

Bogue Islands, Jamaica; from sponge on mangrove roots; August 10, 1910; C. B. Wilson; 1 female (43071).

Montego Bay, Jamaica; July 12, 1910; C. B. Wilson; 3 males, 1 female (43070).

Montego Bay Point, Jamaica; June 28, 1910; E. A. Andrews; 1 male, 1 female, 1 young (43068).

Umbrella Point, Jamaica; on coral rocks; July 14, 1910; E. A. Andrews; 1 male, 2 females (1 ovigerous) (43069).

Boqueron Bay, Porto Rico; January 25–28, 1899; *Fish Hawk;* 1 male, 7 young (24402).

Guanica Bay, Porto Rico; January 28, 1899; *Fish Hawk;* on coral reef; 2 males, 3 females (24403).

Reefs at Guanica, Porto Rico; January 29, 1899; *Fish Hawk;* 5 males, 8 females (24404).

Ponce reefs, Porto Rico; January, 30, 1899; *Fish Hawk;* 8 males, 1 female, 2 young (24405).

Ponce, Porto Rico; January 30 to February 1, 1899; *Fish Hawk;* 6 males, 7 females (24406).

Playa de Ponce Reef, Porto Rico; February 1, 1899; *Fish Hawk;* 8 males, 7 females, 2 young (24407).

Arroyo, Porto Rico; February 3, 1899; *Fish Hawk;* on Lighthouse Reef; 1 male, 1 female, 2 young (24408).

Arroyo, Porto Rico; February 3 and 4, 1899; *Fish Hawk;* 3 males, 3 females (24409).

Caballo Blanco Reef, Vieques Island, Porto Rico; February 7, 1899; *Fish Hawk;* 1 male (24410).

Ensenada Honda, Culebra Island, Porto Rico; February 9 to 11, 1899; *Fish Hawk;* 50 males, 50 females, 10 young (24411); 1 male (46875).

Fajardo, Porto Rico; February 17, 1899; *Fish Hawk;* 4 males, 5 females (24212).

St. Thomas; 1884; *Albatross;* 95 specimens (7650).

St. Thomas; 1915; C. R. Shoemaker; gift of Carnegie Institution: From piles; 1 female (50383). French Bay; ½ to 2½ fathoms; July 5; station 6; 2 males, 1 female (50381, 53759). Gregerie Bay; 1½ to 2¾ fathoms; July 7; station 7; 5 males, 4 ovigerous females, 1 young (50384). Drift Bay, Water Island; 1½ to 2½ fathoms; July 15; station 11; 1 male (50382).

Antigua; 1918; Barbados-Antigua Expedition, Univ. Iowa: English Harbor; 1 male (Mus. S. U. I.). Pillars of Hercules; 14 males, 6 females (4 ovigerous) (Mus. S. U. I.).

Barbados; May 8, 1890; W. H. Brown, U. S. Eclipse Expedition to Africa; 2 females (14885).

Barbados; 1918; Barbados-Antigua Expedition, Univ. Iowa: Under sea anemone; 3 males, 1 female (Mus. S. U. I.). Pelican Island; 4 males (Mus. S. U. I.).

Curaçao; rifwater; ½ fathom; March 3, 1905; J. Boeke; 1 female (Leiden Mus.).

Aruba, Curaçao; 1905; J. Boeke: Paarden Bay; 1 fathom; coral rocks; March 8; 1 male, 1 young (Leiden Mus.). Lagoon; shallow water; among algae; August 8; 1 young (42974).

Caracas Bay, Curaçao; 1920; C. J. van der Horst; 3 males, 1 female (Amsterdam Mus.).

Spanish Port, Curaçao; April 10, 1920; C. J. van der Horst; 1 male (56866).

Brazil: off the Abrolhos Islands; 30 fathoms; 1872; U. S. C. S. S. *Hassler;* 1 young female (1990, M. C. Z.); "*M. coronatus*" (A. Milne Edwards).

MITHRAX (MITHRACULUS) CORYPHE (Herbst)

Plate 153

Cancer coronatus Herbst, Natur. d. Krabben u. Krebse, vol. 1, 1785, p. 184, pl. 11, fig. 63 (type-locality not given; type not extant). Not Seba, Thesaurus, vol. 3, 1758, pl. 22, fig. 6; nor *Cancer coronatus* Molina, 1782.

Cancer coryphe Herbst, Natur. d. Krabben u. Krebse, vol. 3, pt. 2, 1801, p. 8 (type-locality not given; type not extant).

Mithraculus coronatus White, List Crust. Brit. Mus., 1847, p. 7 (part).—A. Milne Edwards, Crust. Rég. Mex., 1875, p. 106, pl. 20, fig. 1.

Mithrax sculptus Desbonne and Schramm, Crust. Guadeloupe, 1867, p. 9. Not *M. sculptus* Lamarck.

Mithrax (Mithraculus) coronatus Miers, Journ. Linn. Soc. London, vol. 14, 1879, p. 667.

Mithrax coronatus Miers, *Challenger* Rept., Zool., vol. 17, 1886, pp. 87 and 89.

Mithrax coryphe Rathbun, Ann. Inst. Jamaica, vol. 1, 1897, p. 11.

Diagnosis.—Carapace a third wider than long, everywhere nodose. Three antero-lateral lobes. Wrist nodose.

Description.—Carapace very wide, about one-third wider than long. Rostrum small, with 2 truncate teeth separated by a V-sinus. Behind the horns 2 sharp granules. Gastric and cardiac regions roughened by a few, regularly placed nodules. Branchial regions crossed obliquely by 3 deep furrows, forming 3 oblique elevations; the two anterior are entire or nearly so, the posterior broken into 2 rounded nodules. Antero-lateral margins armed with 3 smooth, round, widely-spaced lobes. A small lobe on postero-lateral margin. The inner infra-orbital lobe is more advanced than the supra-orbital. Basal antennal joint subtriangular, a small, marginal lobe just outside base of antenna.

Chelipeds massive; arm bilobed on inner margin, 4- or 5-lobed on outer margin, a few tubercles on upper surface and one at distal end of lower surface; wrist obscurely nodose; palm broad; fingers deflexed, widely gaping in the old, a single tooth near base of dactyl, edges of spooned tips crenulate. Legs more or less rough and fringed with coarse setae; merus joints of first two legs armed with two teeth below; carpus joints of first three legs spinous above.

Color.—Very prettily and finely mottled green and white. Underside chiefly white. Lower part of chelipeds white. Dactyls of legs salmon pink with white tips.

Measurements.—(21957), entire length of carapace 29, width 26.6 mm.

Habitat.—In cavities of corals, rocks, and sponges; on sand, shell, grass to mud bottom.

Range.—Bahamas and Miami, Florida to São Paulo, Brazil. Shallow water to 30 fathoms.

Material examined.—

Abaco Island, Bahamas; 1886; *Albatross;* 1 male, 2 females (1 ovigerous) (11374).

Miami, Florida; G. M. Gray; 1 male (42134).

Off Biscayne Key, Florida; 16–34 feet; May 29, 1912; Paul Bartsch; 1 male, 1 female (45628).

Indian Key, Florida; H. Hemphill; 2 males, 1 female (15083).

Key West, Florida: 1885; H. Hemphill; 6 males, 8 females (15082). C. T. Maynard; 1 ovigerous female (53059); from Boston Society of Natural History. J. S. Kingsley collection; 1 male, 1 ovigerous female (53070); from Boston Society of Natural History.

Sand Key Reef, off Key West, Florida; May, 1911; J. B. Henderson; 1 male (46962).

Cuba; 1914; *Tomas Barrera* Expedition, Henderson and Bartsch: On reef flat between Cayo Hutia and the little Cayo northeast of light; 1 male (48766). Cabañas; Sand, shell, grass to mud bottom; June 8 and 9; 5 males (48663), caught by copper sulphating on reef; 2 males (48764, 48765).

Jamaica: T. H. Morgan; 1 female (17210). Kingston Harbor; 1896; F. S. Conant; 1 male (19588).

Puerto Real, Porto Rico; January 27, 1899; *Fish Hawk;* 1 young female (24394).

Boqueron Bay, Porto Rico; January 28, 1899; *Fish Hawk:* on coral reef; 1 male (24393).

Reefs at Ponce, Porto Rico; January 30, 1899; *Fish Hawk;* 1 male, 2 females (24395).

Playa de Ponce reef, Porto Rico; February 1, 1899; *Fish Hawk;* 3 males, 7 females, 1 young (24396).

Arroyo, Porto Rico; February 3, 1899; *Fish Hawk;* 3 males, 2 females (24202).

Ensenada Honda, Culebra Island, Porto Rico; February 9, 1899; *Fish Hawk;* 1 male, 1 young (24398).

St. Thomas: 1884; *Albatross;* 12 specimens (16200). French Bay, ½ to 2½ fathoms; July 5, 1915; station 6; 2 males, 1 ovigerous female (50387, 53760).

Antigua; 1918; Barbados-Antigua Expedition, Univ. Iowa: Pillars of Hercules; 6 males, 7 females (4 ovigerous) (Mus. S. U. I.). Fort Barclay; July 9; 1 male (Mus. S. U. I.).

Barbados; 1918; Barbados-Antigua Expedition, Univ. Iowa; Pelican Island; 2 males, 1 female (Mus. S. U. I.); tide pool, May 11, 1 male, 2 ovigerous females (Mus. S. U. I.). Barbados; on shore, and from coral head, and under sea anemones; 3 males, 11 females (5 ovigerous), 1 young (Mus. S. U. I.).

Coral reef, Colon, Panama; May 2, 1911; Meek and Hildebrand, Smithsonian Biological Survey; 1 ovigerous female (44186).

Cartagena, Colombia; Colegio de San Pedro Apostol; 1 male (53411).

Caracas Bay, Curaçao; April and May, 1920; C. J. van der Horst; 1 male, 3 young (56375), 2 males, 2 young (Amsterdam Mus.).

West Point, Curaçao; May 14, 1920; C. J. van der Horst; 3 young (Amsterdam Mus.).

Balata Bay, Huevos Island, Trinidad; January 29; W. O. Crosby; 1 young female (55699).

Brazil; 1876–1877; Richard Rathbun, Hartt Explorations: Fernando Noronha; 1 male, 1 female (19948). Pernambuco; 1 male (41426). Rio Formoso, Pernambuco; 1 male, 1 female (19947). Mar Grande, Bahia; 2 males (19949).

Brazil; 1899; A. W. Greeley, Branner-Agassiz Expedition: Rio Goyanna stone reef; 2 males (Stanford Univ.). Pernambuco stone reef, at Ilha de Nogueira; July 10; 3 males (25762). Boa Viagem stone reef; 2 females (Stanford Univ.). Maceio coral reef, Alagôas; July 22, 23, 26; 11 males, 4 females (25763).

Abrolhos Islands, Brazil; December 27, 1887; *Albatross;* 8 males, 6 females (21957).

Ilha Victoria, São Paulo, Brazil; 1906; Fr. Günther; 1 male (47831), received from H. von Ihering.

MITHRAX (MITHRACULUS) DENTICULATUS Bell

Plate 154, figs. 2 and 3

Mithrax denticulatus Bell, Proc. Zool. Soc. London, vol. 3, 1835 (1836), p. 172 (type-locality, Galapagos Islands, under stones; type not extant); Trans. Zool. Soc. London, vol. 2, 1836, p. 54, pl. 11, fig. 2.—Nobili, Boll. Mus. Zool. Anat. Comp. R. Univ. Torino, vol. 16, 1901, No. 415, p. 31.

Mithraculus denticulatus White, List Crust. Brit. Mus., 1847, p. 7.—A. Milne Edwards, Crust. Rég. Mex., 1875, p. 109, pl. 23, fig. 4.

Diagnosis.—Carapace nearly half wider than long. Two lobes and one spine on antero-lateral margin. Two lobes of basal antennal segment equally advanced. Inner edge of wrist laminate.

Description.—General shape same as in *M. coryphe.* Rostrum similar. Tubercles immediately behind rostral horns larger than in *coryphe.* Five of the smallest gastric tubercles form a transverse row. Oblique branchial grooves deep, but more longitudinal than in *coryphe.* Antero-lateral projections consisting of two lobes followed by a spine at the lateral angle; all are hooked forward at the tip. A postlateral spine is followed by two dorsal tubercles in the same line. Anterior edge of basal segment of antenna deeply bilobed, lobes equally advanced with the rostrum.

Chelipeds wider than in *coryphe;* arm with only one lobe, which may be feebly bilobed, on inner margin, 4 spines on outer margin, and on distal half two or three tubercles above and one below; 6 well-marked tubercles on dorsal surface of wrist and 2 on inner edge, which is laminate; manus short and high; immovable finger horizontal; interdigital sinus triangular; a tooth at proximal two-fifths of dactylus, prehensile edges crenulate at the tips. Legs very rough with spines above and furnished with coarse setae; merus joints with from 1 to 3 tubercles below, of last pair with tubercles also on posterior surface.

Color.—Plumbeous, passing into fuscous (Bell).

Measurements.—Male (3209), entire length of carapace 13, width including spines 19 mm.

Range.—Lower California to Ecuador.

Material examined.—

Cape St. Lucas; John Xantus; 1 male, 1 young female (1241, M. C. Z.).

Panama; Capt. J. M. Dow; 2 males, 1 female (3209).

Perico Island, Panama; October 26, 1904; *Albatross;* 1 male, 1 female (33388), 1 male (M. C. Z.).

MITHRAX (MITHRACULUS) NODOSUS Bell

Plate 155

Mithrax nodosus Bell, Proc. Zool. Soc. London, vol. 3, 1835, p. 171 (type-locality, Galapagos Islands; type not extant); Trans. Zool. Soc. London, vol. 2, 1836, p. 53, pl. 11, figs. 1–1*b*.

Mithraculus nodosus White, List Crust. Brit. Mus., 1847, p. 7.—A. Milne Edwards, Crust. Rég. Mex., 1875, p. 108, pl. 23, figs. 5–5*d*.

Mitraculus ruber Cano, Boll. Soc. Nat. Napoli, ser. 1, vol. 3, 1889, p. 185. Not *Mithraculus ruber* Stimpson.

Diagnosis.—Three large lobes on antero-lateral margin. Posterior part of carapace eroded. Inner edge of cheliped (to middle of manus) laminate.

Description.—Allied to *M. coryphe.* Carapace narrower, rostral teeth narrower and more deeply separated; the pair of tubercles behind them subacute; 7 small, gastric tubercles in 2 transverse rows of 2 and 5; inner supra-orbital angles narrow, lobiform, prominent; outer angles not dentiform nor pronounced; 3 antero-lateral lobes larger than in *coryphe,* the first one close to the orbital angle; a small, acute, postero-lateral tooth. Carapace along the posterior and postero-lateral borders granular and eroded. Oblique grooves on the branchial region shallower than in *coryphe*.

A low tubercle on the basal antennal segment directly behind the insertion of the next segment. The merus of the outer maxilliped appears very short, being overlaid by a prolongation of the inner two-thirds of the ischium.

Inner margin of arm of cheliped very thin and sharp, unilobate; outer margin bilobate, the lobes coarse, like those of the carapace; a tubercle on upper surface. Wrist rough with tubercles, its inner edge produced, thin, truncate and entire. Hand high, upper edge proximally sharp; immovable finger horizontal; gape in the adult male moderate; a single tooth at the basal two-fifths of the dactylus; crenulation of finger tips feeble.

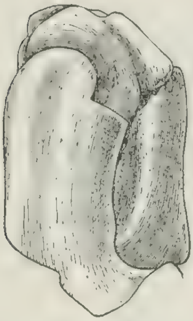

FIG. 127.—MITHRAX (MITHRACULUS) NODOSUS, MALE (25673), MAXILLIPED, × 5.4

Legs coarsely spinose; from each spine proceeds a tuft of coarse setae; tufts of slenderer setae elsewhere.

Color.—Brown above; hands dark plumbeous; it is paler beneath (Bell).

Measurements.—Male (25673), entire length of carapace 23.2, width 29.4 mm.

Habitat.—Under stones at low water (Bell).

Range.—Galapagos Islands; Chile (Miers).

Material examined.—

James Island, Galapagos Islands; *Hassler*; 5 males, 4 females (1983, M. C. Z.).

Albemarle Island, Galapagos Islands; 1898–1899; Hopkins Stanford Galapagos Expedition: Black Bight; January 9; 2 males (Stanford Univ.). Tagus Cove, on reef north of Tagus Hill; March 16; 1 male, 1 female, 1 young (25673), 2 males, 1 female, 1 young (Stanford Univ.).

Chatham Island, Galapagos Islands; Dr. W. H. Jones, U. S. N.; 1 male, cast shell (13873).

Hood Island, Galapagos Islands; April 7, 1888; *Albatross;* 1 female (21959).

Charles Island, Galapagos Islands: April 8, 1888; *Albatross;* 1 female (21958). *Hassler;* 3 males (1 soft shell), 3 females (1981, 1982, M. C. Z.).

Duncan Island, Galapagos Islands; April 13, 1888; *Albatross;* 2 females (21960).

MITHRAX (MITHRACULUS) FORCEPS (A. Milne Edwards)

Plate 156

Mithraculus forceps A. MILNE EDWARDS, Crust. Rég. Mex., 1875, p. 109, pl. 23, fig. 1 (type-locality, Guiana; type in Paris Mus.).

Mithraculus hirsutipes KINGSLEY, Proc. Boston Soc. Nat. Hist., vol. 20 1879, p. 147 (type-locality, Key West, Florida; type not extant).

Mithrax forceps MIERS, *Challenger* Rept., Zool., vol. 17, 1886, pp. 87 and 88.—RATHBUN, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 269.

Mithrax hirsutipes MIERS, *Challenger* Rept., Zool., vol. 17, 1886, p. 87.

Mithrax forceps hirsutipes VERRILL, Trans. Conn. Acad. Arts and Sci., vol. 13, 1908, p. 409, text-fig. 42, pl. 24, figs. 4–6.

Diagnosis.—Ridges between sulci of carapace little subdivided. Four acute antero-lateral spines or teeth. Wrist smooth above. Color reddish or yellowish.

Description.—Carapace similar in shape to that of *M. sculptus*, comparatively smooth, large specimens with scattered punctures, small ones deeply sculptured. Three grooves run diagonally backward from near first, second, and fourth sinuses of lateral margin; of the intervening ridges thus formed, the two anterior are less broken up into lobules than in *M. sculptus*. Six or seven depressed tubercles along margin and on posterior part of branchial region, two or three along outer margin of hepatic region, and two pairs on frontal region directly behind lobes of rostrum. Median notch of front broadly V-shaped. Antero-lateral teeth four, acute, slender, separated by broad rounded sinuses, the first the shortest and in large specimens subacute, the remainder sharp and directed forward, the second usually the longest and largest. Sometimes a small postero-lateral tooth.

Arm with five spines or spiniform tubercles on upper (posterior) margin, two on upper face just within margin; on the inner (anterior) margin two prominent teeth. Carpus smooth, sometimes unarmed, often with a short spine or tubercle on inner margin anterior to inner angle, giving appearance of a double tooth. Fingers widely gaping in male; dactylus with a large tooth one-third distance from proximal end, or instead a few minute teeth; the pollex may have from one to three small teeth or tubercles in the middle. Ambulatory legs distinctly spiny and fine-hairy.

Color.—Chestnut or terra-cotta or uniform yellowish-brown, varying to dull yellow and to greenish-brown. Often there is a wide, pale yellow, median dorsal stripe, especially in the young, where also the legs are often banded. (Verrill.)

Habitat.—On rocky shores and reefs in crevices and living under stones and dead corals; also exposed, between tides and in shallow water. (Verrill.)

Measurements.—Male (25448), entire length 21, width 24.6 mm.

Range.—From Cape Hatteras, North Carolina, via Gulf of Mexico to Rio de Janeiro, Brazil. Bermuda. Shallow water to 30 fathoms.

Material examined.—See table, pages 434-437.

MITHRAX (MITHRACULUS) RUBER (Stimpson)

Plate 157

Mithraculus ruber Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 118 (type-locality, reef at Cruz del Padre, Cuba; type not extant).

Mithraculus nudus A. Milne Edwards, Crust. Rég. Mex., 1875, p. 110, pl. 23, fig. 2 (type-locality, Guadeloupe; cotypes in Paris Mus.).

Mithrax ruber Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 87.

Mithrax nudus Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 87.

Diagnosis.—Dorsal sulci shallow. Three antero-lateral protuberances, all blunt in the old, the last one sharp in the immature. A small lobe on outer margin of basal antennal joint. One lobe on inner margin of arm.

Description.—Carapace of moderate width; surface naked (pubescent in the young), polished, and uneven. A few rounded prominences are on branchial region; some small depressed tubercles are arranged in transverse rows on gastric region, and larger ones occur on cardiac and branchial regions. The lateral protuberances are four, the first two blunt, the last two blunt in the old, sharp and spiniform in the immature, the third largest and most produced, the fourth postlateral; a tubercle on anterior slope of the second tooth, a spine in the interval between second and third. Frontal horns very short, thickened, upturned, blunt; interspace narrow, V-shaped. Behind the horns two small acute prominences. Margin of orbit thickened, especially the preorbital lobe; a small tooth on upper margin; outer angle very slightly projecting. Basal antennal joint rather narrow, with two lobes, one large and thick at antero-external angle and further advanced than preorbital lobe, the other small, on outer margin. Chelipeds strong; arm with a single lobe at proximal end of anterior margin, four spines on posterior margin, and two spines on upper surface; wrist almost smooth, its inner angle proximally situated and smoothly rounded. Hand with parallel margins; immovable finger convex beneath; fingers denticulate except at base; the movable finger in the full-grown male bears a strong tooth near its proximal third; fingers gaping. Ambulatory legs spinous and densely hairy, with fine and coarse hairs; merus of first three pairs with a tubercle on lower margin.

Color.—Carapace chestnut-red with some bluish posteriorly (Stimpson).

Measurements.—Female (24096), entire length 13, width 15.8 mm. The male type of *nudus* was much larger, 19 by 24 mm.

Range.—From Cuba to Barbados and Curaçao.

Material examined.—

Cabanas, Cuba; 2 to 25 fathoms; sand, shell, grass to mud bottom; June 8–9, 1914; station 16, *Tomas Barrera* Expedition, Henderson and Bartsch, collectors; 1 young (48748).

Mayaguez, Porto Rico; January 23, 1899; *Fish Hawk:* on coral reef; 1 male (24131).

Playa de Ponce Reef, Porto Rico; February 1, 1899; *Fish Hawk;* 2 young (24095).

Arroyo, on Lighthouse Reef, Porto Rico; 1899; *Fish Hawk;* 1 female, 1 young (24096).

St. Thomas; 1915; Clarence R. Shoemaker; gift of Carnegie Institution: French Bay; ½ to 2½ fathoms; July 5; station 6; 1 male (50380). Gregerie Bay; ½ to 2¾ fathoms; July 7; station 7; 1 young female (50379). St. Thomas Harbor; taken from sponges; July 11; 1 male, 2 females (50377). Drift Bay, Water Island; ½ to 2½ fathoms; July 15; station 11; 1 young (50378).

English Harbor, Antigua; shore; 1918; Barbados-Antigua Exped., Univ. Iowa; 1 female (Mus. S. U. I.).

Guadeloupe; 1 male, 1 female (Geneva Mus.). Two specimens, cotypes (Paris Mus.).

Barbados; 1918; Barbados-Antigua Exped., Univ. Iowa: Pelican Island, Barbados; 1 male, 1 young female (Mus. S. U. I.). Needham Point; May 18; 4 males, 1 immature female (Mus. S. U. I.). Off Needham Point; 84 fathoms; rocky; station 20; 2 males, 3 females (Mus. S. U. I.). Okra Reef; May 13; 6 males, 6 females, all small (Mus. S. U. I.). Barbados; some from coral heads; 13 males, 6 females (3 ovigerous), 3 young (Mus. S. U. I.).

Caracas Bay, Curaçao; C. J. van der Horst: In *Macandrina;* April 7, 1920; 1 male, 3 young (56373). In sponge; May 3, 1920; 1 ovigerous female (56376).

MITHRAX (MITHRACULUS) AREOLATUS (Lockington)

Plate 154, fig. 1

Mithrax areolatus LOCKINGTON, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 71 [9] (type-localities, Port Escondido and San José Island, both in the Gulf of California; types not extant).

Mithraculus areolatus? STREETS and KINGSLEY, Bull. Essex Inst., vol. 9, 1877, p. 104.

Mithraculus areolatus KINGSLEY, Proc. Boston Soc. Nat. Hist., vol. 20, 1879, p. 146.

Mitraculus areolatus CANO, Boll. Soc. Nat. Napoli, ser. 1, vol. 3, 1889, p. 186.

Diagnosis.—Carapace deeply areolate. Three antero-lateral teeth, first and second obtuse, third slender and acute. Wrist prominently tuberculate.

Material examined of Mithrax (Mithraculus) forceps

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°F						
North Carolina:											
Off Cape Hatteras	35 21 00	75 21 30	16	gy. S. brk. Sh.		Oct. 19, 1884	2280	*Albatross*	4 y	41027	
Off Beaufort			30			Aug. 27, 1913		*Fish Hawk*	1	51002	
Fishing grounds, off Beaufort.	34 20 00 Course E. 1 mile	76 49 00	13.5	Co. S. Sh.		Sept. 6, 1913	7943	do	5♂ 7♀	51105	
Do	34 21 30 Course N. 1 mile	76 50 30	13.75	Co. S. Sh.		do	7944	do	7	51020	
25 miles E. SE. Lookout Lightship.						July 28, 1915		do	1 cheliped	50448	
Near Fishing Banks						Aug. 4, 1915		do	1♂	50454	
Off Cape Fear	33 42 45	77 31 00	17	S. P.		Oct. 20, 1885	2616	*Albatross*	4	16211	
Do	33 38 00	77 36 00	15	gy. S. brk. Co.		do	2623	do	1♂ 1♀	11224	
Do	33 37 15	77 35 30	17	crs. yl. S. brk. Sh.		do	2618	do	2♂ 7 y	14017	
South Carolina:											
Near Charleston			1–12			Mar. 20, 1880		R. E. Earll	2♂ 1♀	3159	
15 miles southeast of Charleston.						Mar. 23, 1880		do	2♂ 1♀ 2♂	5062 5823	From a piece of coral.
Florida:											
Miami								G. M. Gray	1♂	42132	
Off Biscayne Key			*Feet* 16–34			May 29, 1912		P. Bartsch	2 y	46873	
Cape Florida						1884		E. Palmer	1♀ 1 y	13928	
Biscayne Bay						1901		J. E. Benedict	1♂ 1♀	25566	
Ragged Keys						1901		do	1♂	25568	
Rodriguez Creek						1884		E. Palmer	2♂	16048	
Indian Key, along shore			low tide					H. Hemphill	2♂ 2♀	16046	
Hawk Channel	3⅛ miles N. ¾ E. of Sombrero Light.		*Feet* 11.5	rky		Jan. 27, 1903	7427	*Fish Hawk*	2♂	46942	
Do	1 mile N. NW. ½ W. of East Washerwoman.		16	rky		do	7428	do	1♂ 1♀	46943	
Do	½ mile SE. by S. of SE. end of Duck Key.		14	rky		do	7429	do	1♂ 1 ovig. ♀	46944	

		Fathoms								
Off Duck Key	Duck Key, N., 1¼ mile.	2.75	Co. Sh	69.5	Dec. 20. 1912	4	do	1♂	50449	
Off Key West	Key West Light to E. Channel Bar Buoy, 71° 53′, to Beacon "A", 74° 46′.	5.25	co. S. Grs	°C 20	Feb. 13, 1902	7278	do	2♂ 1♀	46872	
Key West					1885		H. Hemphill	5 y 4♂ 2♀	15078 16047	
Do							H. E. Webster	1 y ♀	55698	From Boston Soc. Nat. Hist.
Do							C. T. Maynard	1♂	53060	Do.
West Channel, entrance to Key West.	Mid-channel Buoy bearing W. by S., ½ mile.	7.75	co. S	20	Feb. 13, 1902	7271	*Fish Hawk*	1 ovig. ♀	46939	
Off Northwest Channel	24 42 30 81 55 52	7.25	Co	20	Feb. 21, 1902	7293	do	2♂ 2♀	46941	
Off Boca Grande	Boca Grande Light, N. NE. ⅜ E., 24½ miles, to NE. ¼ N., 20 miles.	12.5		°F 68.5	Jan. 2, 1913	7796	do	6♂ 2♀	56221	
Eastern Dry Rocks					1884		E. Palmer	12♂ 11 ♀	16049	
Dry Tortugas							Lieut. Jacques	1♂ 1 y	53076	From Boston Soc. Nat. Hist.
Off Cape Sable	E. end of Sawyer Key, S. ¼ W., 2¼ miles.	4.75	rky	°C 22.5	Dec. 22, 1902	7390	*Fish Hawk*	1♂ 1 ovig. ♀ 2 y.	46940	
Off Charlotte Harbor	26 33 00 83 10 00	28	sdy	19.1	Apr. 2, 1901	7123	do	1♂	25593	
Off Sarasota Bay, at anchor.	Sarasota Point, NE. by E., 9¼ miles.	(1)		°F 65	Jan. 5, 1913	7801 (15)	do	1♂	56222	
Highland section	27 49 30 83 00 00	7	hrd. & Co.	°C 14.6	Jan. 28, 1902	7257	do	1♂ 2♀	46938	
Do	27 55 30 83 11 30	13	Co. R	15.2	do	7253	do	2♂	46937	
Anclote section	28 08 30 83 10 00	10	rky. Co	13.5	Jan. 23, 1902	7231	do	2♂ 1♀	46812	
Do	28 01 30 83 08 00	11	rky	13.5	Jan. 23, 1902	7234	do	3♂ 4♀	46813	
Do	28 19 30 83 01 00	6.25	rky. Grs	12.5	Jan. 24, 1902	7239	do	8♂ 4♀ 1y	46936	1 with Rhizocephalid parasite.
Do					do	(2)		2♂	46805	
Do	Anclote Light, E. ⅛ S., 14 miles.	8.5	Co	°F 63.95	Jan. 11, 1913	20	do	1♂ 3♀	50455	
St. Martins section	28 26 00 83 02 30	7.5	rky. Co	°C 13	Jan. 15, 1902	7215	do	1♂ 1♀	46870	
Do	28 26 30 83 08 00	10	sdy. grassy	13.6	do	7216	do	2♂	46871	
Do	28 34 45 83 08 00	5.75	Co. R. G	12.5	do	7221	do	1♂ 4♀	46811	
North Key section	28 52 45 83 07 00	5.75	rky	16.1	Dec. 9, 1901	7209	do	1♂ 11♀	46810	
Do	28 54 00 83 30 30	11	R. Co. S	17	Nov. 28, 1901	7185	do	1 y	46868	
Do	28 55 30 83 02 00	4	rky	15.3	Dec. 9, 1901	7208	do	1♂	46848	

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[1] Off beach.

[2] Station 7241 or 7242.

Material examined of Mithrax (Mithraculus) forceps—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
Florida—Continued.	° ′ ″	° ′ ″			°C						
North Key section	29 00 00	83 18 45	5.75	rky. Co	15.3	Nov. 28, 1901	7182	*Fish Hawk*	1♂ 1♀	46845	
Do	29 02 30	83 14 00	4.25	sdy	14.8	do	7181	do	1♀	46867	
					°F						
Off Cedar Keys	Cedar Keys Light, N. ¾ E., 21¾ miles.		5.75	Co	63.45	Jan. 11, 1913	21	do	1♂ 2 y	50450	
					°C						
Pepperfish Key section	29 18 00	83 37 00	8	rky	18	Nov. 21, 1901	7161	do	6♂ 8♀	46844	
Do	29 19 30	83 46 00	10	S. Co	18.3	Nov. 20, 1901	7158	do	2♂ 2♀ (1 ovig.)	46843	
Do	29 21 00	83 32 00	6.75	rky	16.7	Nov. 31, 1901	7160	do	1♀	46866	
Deadmans Bay section	29 32 00	83 58 30	10.5	Co	22.5	Nov. 7, 1901	7154	do	1♀	46865	
Do	29 32 30	83 50 00	9	R. Co	16.6	Dec. 6, 1901	7201	do	4♂ 4♀	46847	
Do	29 35 20	83 56 00	9.5	S. Co	23	Nov. 7, 1901	7153	do	6♂ 3♀	46809	
Do	29 39 30	83 53 10	7.5	S. Co	21.5	Nov. 7, 1901	7152	do	3♂ 2♀ 1 y	46808	
Do	29 43 40	83 49 45	5.25	Co	20.5	do	7151	do	7♂ 3♀	46807	
Aucilla section	29 44 09	84 06 30	7	R. Co	16.5	Dec. 5, 1901	7193	do	1♂ 1♀	46869	
Do	29 49 00	84 06 15	6	R. Co	15	do	7192	do	1♂ 2♀	46846	
Do	29 52 10	83 51 47	3	S. Co	20	Nov. 6, 1901	7147	do	1♂ 1♀	46806	
					°F						
Off Carrabelle	Carrabelle Light, NW. by N., 16 miles.		10.25		60.2	Jan. 16, 1913	23	do	1 y. ♀	50453	
Do	Carrabelle Light, N. by W., 14⅔ miles.		10		60.2	do	24	do	1 y. ♀	50452	
Southern States						1880		U. S. Fish Comm.	1♂	16061	
Caribbean Sea: Old Providence Island.						1884		*Albatross*	2	9130	
Porto Rico:											
Mayaguez Harbor						Jan. 20, 1899		*Fish Hawk*	1♂	24175	
Off Gallardo Bank	Tangent of Morillos de Cabo Rojo, E. SE. ¾ E., 9⅓ miles.		10	Co. S		Jan. 26, 1899	6076	do	1 y	24173	
Off Vieques Island	Point Mula Lighthouse, S. SW. ⅜ W., 5¾ miles.		14	Co. S		Feb. 8, 1899	6085	do	1♂ 1 y	24176	
Do	Culebritas Lighthouse, NE. ½ N., 10 miles.		15	Co		do	6091	do	1 y. ♀	24174	
Do	Culebritas Lighthouse, NE. ⅜ E., 7¼ miles.		16	Co		do	6092	do	3♂ 3♀ 5 y	24177	
Do	Point Mula Lighthouse, E. ½ N., 11¼ miles.		6	Co		do	6096	do	2♂ 3♀ 3 y	24179	

Off Culebra Island	Point Mula Lighthouse, SW. ¼ S., 10½ miles.	15.25	Co. S.		do	6087	do	1♂ 1♀	24178	
Do	Culebritas Lighthouse, NE., 5¼ miles.	15	Co.		do	6093	do	2♂ 2♀	24182	
Off Humacao	Village of Hucares, N. ½ W., 3 miles.	12.5	Co.		do	6098	do	2♂ 4♀	24181	
Do	Village of Hucares, NW. ¾ W., 2¼ miles.	9.5	Co.		do	6099	do	3♂ 4♀ 1y	24180	
St. Thomas					1884		*Albatross*	8	16197	
3 miles from St. Thomas, in fish pot.					July 8, 1915		C. R. Shoemaker	3♂ 1♀	50451	From Carnegie Institution.
Drift Bay, Water Island		0.5-2.5			July 15, 1915	11	do	1♂ 1♀	50392	
Barbados					1918		Barbados-Antigua Exped., Univ. Iowa.	2♂ 3y	Mus. S. U. I.	
Off Needham Point		84	rky		do	20	do	1 ovig. ♀	Mus. S. U. I.	
Curaçao:										
Fink Bay (New Port)		(3)	Co.		July 18, 1905		J. Boeke	1♂	Leiden Mus.	
Curaçao					1884		*Albatross*	13	16198	
Do					Feb. 10-18, 1884.		do	1♂	19342	Color, green.
Spanish Water					Apr. 17, 1920		C. J. van der Horst.	3♂ 3♀ ovig	56855	
Aruba: Lagoon		(3)	Algae		Aug. 8, 1905		J. Boeke	1 ovig. ♀	Leiden Mus.	
Venezuela: Cumana							Capt. Couthouy	7♂ 1♀	1974, M.C.Z.	
Trinidad							W. O. Crosby	5♀ (3 ovig.)	53062	From Boston Soc. Nat. Hist.
Brazil:										
Natal, Rio Grande do Norte.					1899		Branner-Agassiz Exped.	2♂	Stanford Univ.	
Pernambuco stone reef at Ilha de Nogueira.					July 10, 1899		do	1♂	25759	
Rio Formoso, Pernambuco.					1876-1877		R. Rathbun, Hartt Explorations.	4♂ 2♀	19954	
Maceio coral reef, Alagôas.					July-Aug., 1899.		Branner-Agassiz Exped.	4♂ 6♀	25760	
Brazil					1899		do	1♂	25761	
Plataforma, Bahia					1876-1877		R. Rathbun, Hartt Explorations.	3♂ 1♀	19955	
Abrolhos Islands					Dec. 27, 1887		*Albatross*	2♂	21956	
Rio Janeiro								1	Geneva Mus.	
Bermuda					1876-1877		G. Brown Goode	60	13045	
Hungry Bay							F. G. Gosling	2♂ 2♀	25448	

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[3] Shallow water.

Description (after Kingsley).—Carapace naked, depressed, deeply areolate, areolations less broken than in *M. sculptus*, punctate; a transverse row of five tubercles on the gastric region and two more acute ones on the outer posterior portion of each branchial region, two prominent tubercles at the base of the rostrum, one on each side of the median line. Rostrum short, outer margin of horns arcuate, inner straight. Orbits with one distinct fissure above, inner angle prominent, rounded; outer angle also rounded but less prominent; external hiatus a round opening. Antero-lateral margin with 3 teeth besides the external angle of the orbit; first and second teeth stout, prominent, obtuse, the second the larger; third tooth slender, acute, hooked forward; a small acute tooth on the postero-lateral margin behind the lateral angle. A tubercle on the subhepatic region beneath the first tooth of the antero-lateral margin. An oblique row of rounded tubercles running backward from the palatal region. Basal joint of antenna with two short blunt teeth.

Chelipeds small; posterior margin of merus 4-toothed, upper surface with one tooth, inner margin with a single rounded tubercle; carpus prominently tuberculate; hand smooth, inflated, cristate above at the base, a small depressed tubercle on the outer surface at the articulation with the carpus; fingers moderately gaping, denticulated at the extremity, a basal tooth on the dactylus in both sexes, but larger in male. Legs with spinous tubercles on the basal joints, becoming obsolete on the distal joints; dactyli strongly arcuate.

Color.—In spirits, light red (Lockington). Carapace and legs ochraceous yellow (Cano).

Measurements.—Male, cotype, length 16, width 18.5 mm. (Lockington); male, length 11, width 13.5 mm. (Kingsley); female, length 11.7, width 15 mm. (Kingsley).

Range.—San Diego, California; Gulf of California (type-locality); Pearl Islands, Bay of Panama (Cano).

Material examined.—San Diego, California (locality supposedly correct); 1 young specimen, dried (53961); gift of San Diego Society of Natural History.

MITHRAX (MITHRACULUS) CINCTIMANUS (Stimpson)

Plate 158

Mithraculus cinctimanus Stimpson, Amer. Journ. Sci., vol. 29, 1860, p. 132 (*nomen nudum*); Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 186 (type-localities, Tortugas and St. Thomas; types not extant).—A. Milne Edwards, Crust. Rég. Mex., 1875, p. 112, pl. 23, fig. 3.

Mithrax affinis Desbonne in Desbonne and Schramm, Crust. Guadeloupe, 1867, p. 10 (type-locality, Guadeloupe; cotype in Paris Mus.).

Mithrax cinctimanus Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 87.

Diagnosis.—Carapace longer than broad. Four antero-lateral teeth, either acute or tuberculiform. Two teeth on anterior margin of basal antennal joint.

Description.—Carapace longer than broad and covered, especially on posterior two-thirds, with small, rounded lobules or tubercles. Branchial regions obliquely sulcate. Rostral horns short, rather narrow, and widely separated. Inner angle of orbit prominent, acute. Antero-lateral margin with four small teeth, often tuberculiform, sharp-pointed in the old. Basal joint of antenna very broad, with an antero-external spine, barely exceeding upper preorbital tooth, and a tooth behind the next segment.

Arm tuberculous, two or three spiniform teeth on inner margin, outer margin tuberculous; wrist nearly smooth, two or three tubercles on inner margin; palm dilated; fingers gaping; a tooth on dactylus near its base; sometimes a smaller one on pollex near spoon; spoon-shaped tips long, crenulated. Ambulatory legs a little rough, sparsely hairy, hairs fine and chiefly on last three joints.

Color.—Yellowish, with a large brown spot covering a large part of the cardiac region. Claws and feet spotted with brown and white; often the dark shade forms a broad band on the hand, whence the specific name.

Measurements.—Female (13897), entire length of carapace 20.5, width 19.7 mm.

Range.—Bahamas and Florida Keys to West Indies and Curaçao.

Material examined.—

Green Turtle Cay, Bahamas; E. A. Andrews; 1 male (20708).

Cape Florida, Florida; 1884; Edward Palmer; 1 female (15084).

Biscayne Bay, Florida; 1901; J. E. Benedict; 1 male, 1 female (25564).

Elliotts Key, Florida; 1901; J. E. Benedict; 1 male (25570).

Carysfort Reef, Florida; 1884; Edward Palmer; 1 female (13897).

Rodriguez Creek, Florida; 1884; Edward Palmer; 1 male (14429).

Harbor Key, Florida; J. S. Kingsley collection; 1 male, 1 ovigerous female (53047); from Boston Society of Natural History.

North of Knight's Key Channel, Florida; 2 miles NE. by E. of Basin Bank; 8½ feet; rocky; January 22, 1903; station 7417, *Fish Hawk;* 1 female (46878).

Salt Pond Key, Florida; 1884; Edward Palmer; 1 male (14439).

Key West, Florida: 1885; H. Hemphill; 40 specimens (13830), 1 young (16062). 1884; *Albatross;* 4 males, 9 females (16194).

Eastern Dry Rocks, Florida; 1884; Edward Palmer; 1 male (14437).

Jamaica; T. H. Morgan; 1 specimen (17208).

Harris Point, west of Montego Bay, Jamaica; July 16, 1910; E. A. Andrews; 1 male (43007).

Umbrella Point, near Montego Bay, Jamaica; July 15, 1910; E. A. Andrews; 1 ovigerous female (43008).

Kingston Harbor, Jamaica; 1893; R. P. Bigelow; 1 male (17963).

Guanica Bay, Porto Rico; on coral reef; January 28, 1899; *Fish Hawk;* 1 male, 1 female (24203).

St. Thomas; 1884; *Albatross;* 4 specimens (16195).

Mosquito Bay, St. Thomas; 2 fathoms; July 21, 1915; station 12, Clarence R. Shoemaker; 1 male (50374), gift of Carnegie Institution.

Groote Bai, St. Martin; among stones and algae; August, 1905; J. Boeke; 1 ovigerous female (42977).

Simsons Bay Lagoon, St. Martin; shallow water; on coral rocks, inside sponges; September 7, 1905; J. Boeke; 1 male, 1 ovigerous female (Leiden Mus.).

English Harbor, Antigua; shore; 1918; Barbados-Antigua Exped., Univ. Iowa; 1 immature female (Mus. S. U. I.).

Curaçao; 1884; *Albatross;* 2 males, 1 female (16196).

Spanish Water (lagoon), Curaçao; shallow water, among madrepores; July 7, 1905; J. Boeke; 1 male (Leiden Mus.).

Spanish Water, Curaçao; from *Porites porites;* 1920; C. J. van der Horst; 1 male (56859).

Caracas Bay, Curaçao; from coral; April 7, 1920; C. J. van der Horst; 1 female (56856).

Genus TELEOPHRYS Stimpson

Teleophrys Stimpson, Amer. Journ. Sci., ser. 2, vol. 29, 1860, p. 133; type, *T. cristulipes* Stimpson.

Allied to *Mithrax,* but distinguished by the character of the orbits which have the superior and exterior margins entire or nearly so; there may be traces of two superior fissures. Carapace ovate. Basal segment of antenna narrower than in typical *Mithrax,* armed with a tooth at the antero-external angle. Merus of outer maxilliped broader than ischium, and notched at internal angle for reception of palpus. Legs cristate.

Restricted to America.

KEY TO THE SPECIES OF THE GENUS TELEOPHRYS

A¹. Carapace broader than long. Legs cristate on upper, but not on lower surface.

  B¹. A tooth at middle of outer margin of basal article of antenna. Three antero-lateral branchial spines. No lobe on posterior (outer) surface of propodus of legs. Second movable article of antennae long. **cristulipes, p. 441.**

  B². No tooth at middle of outer margin of basal article of antenna.

    C¹. Two (or sometimes one) antero-lateral branchial spines. A lobe on posterior (outer) surface of propodus of legs------- **tumidus, p. 442.**

    C². Three antero-lateral branchial tubercles, the posterior one may be acute. No lobe on posterior (outer) surface of propodus of legs. Second movable article of antennae short----------------- **pococki, p. 443.**

A². Carapace distinctly longer than broad. Legs cristate on upper and lower surfaces--**ornatus, p. 444.**

Analogous species on opposite sides of the continent: *pococki* (Atlantic); *cristulipes* (Pacific).

TELEOPHRYS CRISTULIPES Stimpson

Plate 159, figs. 1, 2 and 7; plate 262, fig. 7

Teleophrys cristulipes STIMPSON, Ann. Lyc. Nat. Hist. N. Y., vol. 7, 1860, p. 190 [62], pl. 2, fig. 2 (type-locality, Cape St. Lucas; cotype, Cat. No. 1226, M. C. Z.; the specimen mentioned by Pocock is probably also a cotype).—A. MILNE EDWARDS, Crust. Rég. Mex., 1875, p. 113, pl. 19, figs. 2–2e (*Mithrax*, subgenus *Mithraculus*, section *Teleophrys*).—RATHBUN, Proc. U. S. Nat. Mus., vol. 38, 1910, p. 536, pl. 46, fig. 2 (after Stimpson); part: Cape St. Lucas specimen only.

?Mithrax cristulipes MIERS, *Challenger* Rept., Zool., vol. 17, 1886, p. 87.

Mithrax cristulipes RATHBUN, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 273 (part: Pacific coast specimens only).

Diagnosis.—Front (in advance of fronto-orbital sinus) twice as broad as long. Three (exceptionally four) antero-lateral, branchial, marginal spines. Only one lobe on the propodus of ambulatory legs, exclusive of those on the articulating margin. Third (or second free) article of antenna long and slender.

Description.—Carapace a little broader than long, triangular in front, laterally and posteriorly rounded. Surface sparingly granulate and tuberculate. Gastric and cardiac regions moderately protuberant, the former crossed at the middle by a row of four small tubercles, the outer pair a little in advance of the inner pair. Branchial region, deeply separated from the hepatic and armed with three subequal, curved, acute spines on its antero-lateral margin; occasionally a smaller, additional spine is inserted; a marginal hepatic spine; a small spine on postero-lateral margin; above it a large, posteriorly-flattened, blunt tubercle; a small tubercle toward the inner angle of the region.

Rostral horns very small, triangular, blunt; interspace triangular. Preorbital angle elevated and with a dimple near the tip; upper margin of orbit with a small V-shaped emargination continued backward by a furrow. Antennae two-thirds as long as carapace, basal article with a small tooth on its outer margin besides the large one at the antero-external angle; on the carapace just outside the base of this article there is a tubercle. The second movable article is long and slender, fully three times as long as its greatest or distal width.

Inner distal margin of merus of maxilliped oblique. Feet rather broad, naked above, and covered with lamelliform spines or short, leaflike crests, often somewhat imbricated. Chelipeds with the crests on merus and carpus less developed than on the ambulatories: a prominent, bilobed crest on inner margin of merus and of carpus; two long undivided crests on outer surface of carpus; hands very high, compressed, cristate above, less so below, smooth except for a conical tubercle at proximal end, considerably below the middle; surface covered with brownish spots, in alcohol. Fingers of adult male widely gaping, narrow, subcylindrical, tips excavate, crenulate; a tooth on dactyl just behind middle of gape; between this tooth and the tip one or two minute, acute teeth, and on the fixed finger three or four such teeth. On the ambulatory legs the merus, carpus and propodus are lobed on their distal margins; the merus and carpus have several dorsal lobes, somewhat biserially arranged, while the propodus has but one dorsal lobe, near its middle; this article diminishes rapidly in length from first to last leg, and is nearly twice as long in first as in last. The distal half of the dactylus is strongly curved; a few small spinules beneath; horny tip long, light-colored.

Measurements.—Male (46079), total length of carapace 8.7, width of same with spines 10, without spines 9.3 mm.

Range.—From Cape St. Lucas, Lower California, Mexico, to Panama. Miers[53] gives "California," probably an error for "Lower California."

Material examined.—

Cape St. Lucas, Lower California; John Xantus; 3 males, 6 females (3 ovigerous), cotypes (1226, M. C. Z.).

Manzanillo, Colima, Mexico; on drifted pile; July 17, 1913; C. R. Orcutt; 4 males, 2 females (46079).

Pearl Islands, Bay of Panama; S. W. Garman; 3 males, 3 females (1994, M. C. Z.).

TELEOPHRYS TUMIDUS (Cano)

Plate 159, figs. 8 and 9

Mitraculus tumidus CANO, Boll. Soc. Nat. Napoli, ser. 1, vol. 3, 1889, p. 186, pl. 7, fig. 7 (type-locality, Payta, Peru; type in Naples Mus.).

Mithrax tumidus RATHBUN, Proc. U. S. Nat. Mus., vol. 38, 1910, p. 575.

Teleophrys cristulipes RATHBUN, Proc. U. S. Nat. Mus., vol. 38, 1910, p. 536 (part; not pl. 46, fig. 2).

Diagnosis.—Front (in advance of fronto-orbital sinus) less than twice as broad as long. One or two antero-lateral, branchial, marginal spines. A lateral, as well as a dorsal, lobe on the posterior surface of the propodus of the ambulatory legs. Third (or second free) article of antenna short and stout.

Description.—Compared to *T. cristulipes*, the carapace is relatively longer, the lateral angle more pronounced, so that the carapace is less rotund and more triangular; the surface has more granules and fewer tubercles and spines. The crescentic branchial elevation either side of the cardiac region is wider and more swollen. There are only two antero-lateral marginal spines, one at the lateral angle and one in front of it, which is exceptionally replaced by a tubercle. The anterior branchial spine and the hepatic spine of *cristulipes* are replaced by tubercles. The postero-lateral spine is of good size; in front of it is a tubercle which with the three marginal spines forms a parallelogram.

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[53] *Challenger* Rept., Zool., vol. 17, 1886, p. 87.

Front more triangular than in *cristulipes;* the space between the horns is a narrow slit. Upper margin of orbit with two slight emarginations. Outer margin of basal article of antenna subentire and nondentate, although posteriorly it curves outward slightly in a shallow lobe. Second free article short and stout, less than twice as long as its greatest or distal width.

Inner distal angle of merus of maxilliped deeply notched.

Chelipeds less rough than in *cristulipes.* The tubercle at the proximal end of the palm is higher up or nearer the middle. The fingers of the well-developed male, while similar to those of *cristulipes* are a little less slender, and taper gradually from base to tip; in *cristulipes* they are of more even width throughout. The ambulatory legs are stouter than in *cristulipes*, especially the propodus; this article has a lobe on the posterior surface as well as on top; the dactylus is shorter, stouter and more curved than in the allied species.

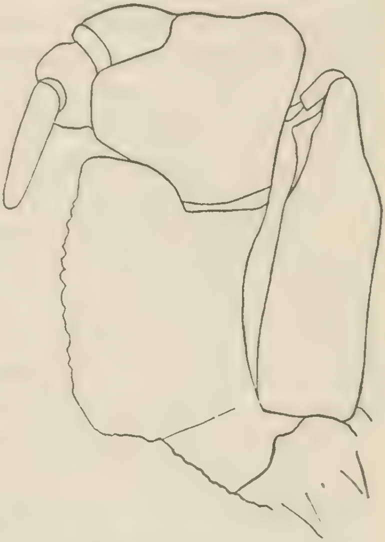

FIG. 128.—TELEOPHRYS TUMIDUS (40466 MAXILLIPED, × 13.5

Measurements.—Male (40466), total length of carapace 17.8, width of same with spines 19, without spines 18.2 mm.

Range.—Galapagos Islands; northern Peru.

Material examined.—

Reef north of Tagus Hill, Tagus Cove, Albemarle Island, Galapagos Islands; March 16, 1899; Stanford Galapagos Expedition; 1 male (25678).

Payta, Peru; U. S. C. S. S. *Hassler;* 5 males, 2 females (1 ovigerous) (1995, M. C. Z.); 1 male, 1 female (55119).

Bay of Sechura, about half way between Bayovar and Matacaballa, Peru; dredged; April 10, 1907; R. E. Coker, collector; received from Peruvian Government; 1 male, 1 female (40466).

TELEOPHRYS POCOCKI Rathbun

Plate 159, figs. 5 and 6

Mithrax (*Teleophrys*) *cristulipes* Pocock, Journ. Linn. Soc. London, Zool. vol. 20, 1890, p. 508.

Mithrax cristulipes Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 273, (part: Brazilian specimens).

Teleophrys cristulipes Rathbun, Proc. Washington Acad. Sci., vol. 2, 1900, p. 143; Proc. U. S. Nat. Mus., vol. 38, 1910, p. 536 (part: Brazilian specimens).

Teleophrys pococki Rathbun, Proc. U. S. Nat. Mus., vol. 64, art. 14, 1924, p. 5 (type-locality, Maccio coral reef, Alagoas, Brazil; holotype, male, Cat. No. 25765).

Diagnosis.—Only one antero-lateral spine on carapace. An obscure tooth at middle of outer margin of basal antennal article. Tubercle on palm large. No lobe on posterior surface of propodus of ambulatory legs.

Description.—Resembling *cristulipes* in shape of carapace and chelae. The carapace is smoother, the granules and tubercles fewer and much depressed; the marginal protuberances are mostly tubercles, one hepatic, three branchial (antero-lateral) of which the second and third are nearer together than first and second, second smallest, third longest, directed nearly forward; a large tubercle is above the postero-lateral margin. Front less deeply bifid than in *cristulipes*. The upper distal margin appears entire but a slight depression takes the place of a notch. Preorbital tooth short, tip arcuate, not dimpled. Basal antennal article more triangular than in the allied species, its anterior tooth very short and blunt, outer tooth obsolescent; second movable article about twice as long as wide.

Merus of maxillipeds with an oblique inner distal margin.

Chelipeds stout; the carpus has two distant lobes on inner margin and only one unbroken ridge on outer surface. Palm dark colored except at distal end, fingers with a broad, reddish band across the middle. The tubercle at proximal end of palm is situated as in *cristulipes* but is larger and sublaminar. Legs slenderer than in *cristulipes*, the last two articles resembling in shape those of that species, having no lateral lobe but a minute dorsal lobe.

Measurements.—Largest male (25765), greatest length of carapace 7.3, greatest width 7.7 mm. Largest female (Amsterdam Mus.), greatest length 9.3, greatest width 11.3 mm.

Range.—Curaçao; Brazil, from Fernando Noronha Island (Pocock) to Alagoas.

Material examined.—

Caracas Bay, Curaçao; 1920; C. J. van der Horst: From a stone on shore; April 30; 1 ovigerous female (Amsterdam Mus.). In sponges; May 3; 1 male (56374), 1 male (Amsterdam Mus.).

Rio Formoso, Pernambuco, Brazil; 1876–1877; R. Rathbun, Hartt Explorations; 1 male, 1 female (19957).

Maceio coral reef, Alagoas, Brazil; July 23 and 26 and August 3, 1899; A. W. Greeley, Branner-Agassiz Exped.; 4 males (1 is holotype), 3 females (25765).

TELEOPHRYS ORNATUS Rathbun

Plate 159, figs. 3 and 4; plate 262, figs. 8 and 9

Mithrax sp., Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 89, pl. 10, figs. 3, 3*a*–3*b*.—Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 273.

Teleophrys ornatus Rathbun, Bull. U. S. Fish Comm., vol. 20 for 1900, part 2, 1901, p. 65, text-fig. 11 (type-locality, Mayaguez Harbor, 4 to 6 fathoms; holotype, Cat. No. 23774, U.S.N.M.).

Diagnosis.—Carapace distinctly longer than broad. Two large tubercles on the intestinal region, one on each side of the median line. A very large branchial spine near lateral angle. Legs cristate on posterior as well as anterior margins.

Description.—Carapace longer than broad; two median tubercles, one gastric, one cardiac; a stout, suberect spine on branchial region near postero-lateral angle; an oblique row of three very small spines on lateral branchial margin, the posterior one situated below the others; a tubercle on hepatic margin; lateral margin also granulate; two large tubercles above posterior margin; a few other tubercles and tufts of hair scattered on carapace. Rostral teeth small, separated by a sinus; preorbital lobes smooth, rounded, prominent; two faint emarginations in upper margin of orbit. Basal article of antenna with an antero-external tooth and a tuberculiform tooth on outer margin. Inner distal margin of merus of maxilliped oblique.

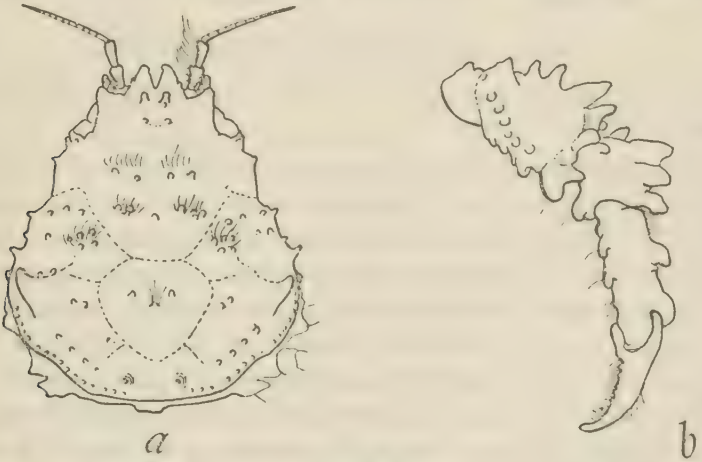

Fig. 129.—Teleophrys ornatus, female (23774), carapace 5.6 mm. long. *a*. Carapace, dorsal view. *b*. Ambulatory leg. (After Rathbun.)

Chelipeds with the thin, upper margin of merus cut into laminate lobes, wrist ornamented with about five similar lobes; hand smooth, tapering distally, the gaping fingers of the young male each armed with three tubercles on the inner edge, the proximal one largest. Chelipeds of female very feeble, fingers gaping very little and only at base. Legs with a single margin, above and below, of irregular laminate lobes on merus, carpus and propodus; the inferior lobes of the propodus are a little above the margin on outer surface; no additional lobe on that surface; dactylus strongly curved, posteriorly denticulate.

Measurements.—Egg-bearing female, holotype, length of carapace 5.6, width 4.7 mm.

Color (Miers).—In spirit, light reddish brown above, white below; a longitudinal band of white along middle of carapace on dorsal surface.

Range.—Yucatan Channel and West Indies; Fernando Noronha, Brazil. Depth, 4 to 24 fathoms.

Material examined.—

Yucatan Channel, off Cape Catoche, Mexico; 24 fathoms; wh. R. Co.; Jan. 30, 1885; station 2365, *Albatross;* 1 young female (16052).

Mayaguez Harbor, Porto Rico; 4 to 6 fathoms; Co.; temp. 68° F.; Jan. 20, 1899; station 6065, *Fish Hawk;* 1 ovigerous female, holotype (23774).

St. Croix, West Indies; 1 female (Copenhagen Mus.).

Additional record.—Fernando Noronha, Brazil; 7 to 20 fathoms; H. M. S. *Challenger;* 1 male (Brit. Mus.).

Genus COELOCERUS A. Milne Edwards

Coelocerus A. MILNE EDWARDS, Crust. Rég. Mex., 1875, p. 84; type, *C. spinosus* A. Milne Edwards.

Carapace swollen, spinose; rostrum in the form of a gutter open below, the lateral margins folding under, and the extremity bifid; orbit with a narrow buttonhole fissure above and below; preocular angles spiniform; postocular cup squarish, strongly produced laterally. Basal antennal segment thick, outer-inferior margin bidentate, outer-superior margin, bordering the orbit, also bidentate; movable portion inserted below the involuted portion of the rostrum. Ocular peduncles stout. Merus of outer maxillipeds a little dilated at outer angle, deeply cut at inner angle for insertion of palp. Ambulatory legs short, first pair not much longer than second.

Contains only one species.

COELOCERUS SPINOSUS A. Milne Edwards

Plate 263; plate 264, figs. 1 and 2

Coelocerus spinosus A. MILNE EDWARDS, Crust. Rég. Mex., 1875, p. 85, pl. 18, figs. 2–2 *b* (type-locality, off Florida, 19 fathoms; holotype, young male, Cat. No. 1989, M.C.Z.).

Coelocerus grandis RATHBUN, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 79, pl. 5 (type-locality, Gulf of Mexico, 35 fathoms; holotype, adult female, Cat. No. 9694, U.S.N.M.).

Diagnosis.—Orbits prominent; rostrum ascending, involuted; median spines 6; lateral spines 5.

Description.—Covered everywhere, except on fingers and greater part of ambulatory dactyls, with a short, close pile. Carapace behind the orbits oval-orbicular, much swollen, armed with a definite number of conical, subacute spines, between the spines closely punctate. Median spines 6, 2 gastric, 1 genital, 2 cardiac, 1 intestinal; a lateral gastric spine (paired) in advance of median spines.

Lateral marginal spines 5, arranged in an arc, the first or hepatic spine the strongest; a dorsal hepatic spine (paired); 6 dorsal, branchial spines (paired), of which 4 form 2 rows of 2 each longitudinally placed, one row near the cardiac region, and the other 2 spines, fifth and sixth, are larger and in transverse line with the third marginal spine; 1 spine above each post-lateral margin and in a transverse line with the median intestinal spine. The supraocular eave has a strong antero-lateral spine and a small post-lateral one which overlaps the postocular cup; this cup is very prominent, has a strong outward pointing spine and, at lateral angle of orbit, a shallow tooth. Between the orbits there is a deep longitudinal depression; rostrum ascending; tip with a broad, shallow bifurcation.

Anterior tooth of basal antennal segment massive. Immediately behind the segment there is a spine pointing downward, another at the buccal angle; 2 very strong, blunt, pterygostomian spines.

Chelipeds of female no longer than next leg; merus with 2 tubercles above near either end besides a short terminal spine; a few sharp tubercles on carpus; palms diminishing in width distally. Legs with a short terminal spine on the merus.

First two segments of female abdomen each armed with a median spine, second segment also with two lateral lobes, third with a median lobe.

The young have proportionally much longer spines.

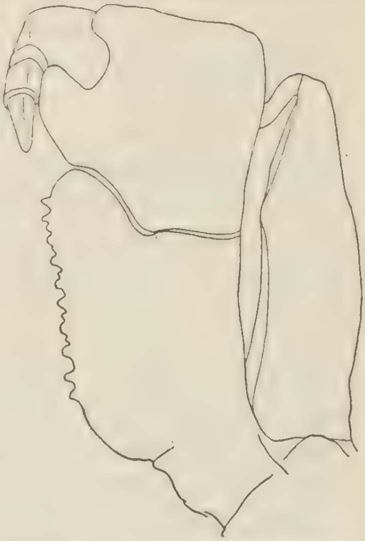
FIG. 130.—COELOCERUS SPINOSUS (9694), MAXILLIPED, × 2.33

Measurements.—Adult female (9694), length of carapace without rostrum 98, width without spines 87, with spines 95, length of cheliped about 104 mm. Adult female (2107, M. C. Z.), length of carapace to extremity of rostrum 113.2, width without spines 82, with spines 88 mm.

Range.—Gulf of Mexico; 13 to 35 fathoms.

Material examined.—

East of Delta of Mississippi River; lat. 29° 24′ 30″ N.; long. 88° 01′ 00″ W.; 35 fathoms; yl. S. bk. Sp.; Mar. 4, 1885; station 2388, *Albatross;* 1 adult female (9694).

Highland section, Florida; lat. 27° 55′ 30″ N.; long. 83° 11′ 30″ W.; 13 fathoms; Co. R.; temp. 15.2° C.; January 28, 1902; station 7253, *Fish Hawk;* 1 young female (47097).

West Florida; 19 fathoms; William Stimpson; 1 young male, soft shell, holotype (1989, M. C. Z.).

Florida; 1 large female (2107, M. C. Z.).

Genus STENOCIONOPS (Leach MS.) Desmarest

Stenocionops (Leach MS.) DESMAREST, Dict. Sci. Nat., vol. 28, 1823, p. 266; Consid. Gén. Crust., 1825, p. 153; type, *Maia taurus* Lamarck, Latreille, 1818=*Cancer furcatus* Olivier, 1791.—GUÉRIN, Encyc. Méth., Entom., vol. 10, 1825, p. 484.

Pericera LATREILLE, Encyc. Méth., Entom., vol. 10, 1825, p. 699; type, *Cancer fuscatus* [slip for *furcatus*] Olivier; Cuvier's Règne Anim., ed. 2, vol. 4, 1829, p. 58 (subgenus).—RATHBUN, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 243, and synonymy.

Carapace subpyriform, rather convex, with dorsal surface uneven, tuberculated or spinous; lateral margins armed with a series of long spines; preocular spine well developed. Rostrum composed of two strong spines which are not deflexed and are divergent from base; orbits tubular, not strongly projecting; eyes small, retractile within orbits. Basal antennal joint considerably enlarged, armed with one or two small distal spines or tubercles not visible in a dorsal view. The merus of outer maxillipeds with distal margin truncate, antero-internal angle emarginate, antero-external angle rounded or subacute. Chelipeds in adult male well developed; palm elongate and subcylindrical or somewhat compressed, not dilated or enlarged; fingers either without any or with a moderate intermarginal hiatus at the base when closed. Ambulatory legs moderately elongated, with joints subcylindrical, without spines; dactyli nearly straight. Abdomen in male distinctly seven-jointed.

Distributed on the east coast of America from Cape Hatteras, North Carolina, to Rio de Janeiro, Brazil; on the west coast from Lower California to Galapagos Islands. West Africa (Miers).

KEY TO THE SPECIES OF THE GENUS STENOCIONOPS

A¹. Hepatic region not enlarged nor produced beyond the general outline of the carapace; armed with not more than one large spine.
  B¹. Rostral horns divergent throughout or at least for their basal half.
    C¹. Marginal spines behind orbit more than three.
      D¹. Dorsum almost unarmed except for a median intestinal spine. **furcata**, p. 449.
      D². Dorsum armed with spines.
        E¹. Fewer than eight median spines ---------- **furcata coelata**, p. 450.
        E². Eight median spines ------------------------------ **ovata**, p. 459.
    C². Marginal spines behind orbit three.
      D¹. Carapace widest between tips of anterior branchial spines. **spinimana**, young, p. 457.
      D². Carapace more triangular, usually widest between tips of posterior branchial spines ------------------------- **triangulata**, p. 461.
  B². Rostral horns curved, convex to each other, contiguous in the middle. **contigua**, p. 451.

A². Hepatic region enlarged and produced separately from the curve of the branchial region.
  B¹. Median spines of carapace 12 or 13. Marginal hepatic spines 3. **spinimana**, adult, p. 457.
  B². Median spines of carapace 9 or 10. Marginal hepatic spines 2.
    C¹. Median spines 9; none on posterior margin. Rostro-orbital region occupying less than one-fourth of total length of carapace. **macdonaldi**, p. 460.
    C². Median spines 10; one on posterior margin. Rostro-orbital region occupying more than one-fourth of total length of carapace. **spinosissima**, p. 455.

ANALOGOUS SPECIES ON OPPOSITE SIDES OF THE CONTINENT

Atlantic	Pacific
furcata	*contiqua*
spinimana	*macdonaldi*

STENOCIONOPS FURCATA (Olivier)

DECORATOR CRAB; MACCA CRAB (JAMAICA FISHERMEN)

Plates 160 and 161

Horned Crab Hughes, Natural History of Barbados, 1750, p. 266, pl. 25, fig. 3.

Cangrejo Cornudo Parra, Descripcion de diferentes piezas de Historia Natural, 1787, p. 135, pl. 50, figs. 2 and 3.

Cancer furcatus Olivier, Encyc. Méth., Hist. Nat., Insectes, vol. 6, 1791, p. 174 (type-locality not given; type perhaps not extant).

Cancer cornudo Herbst, Natur. Krabben u. Krebse, vol. 3, pt. 4, 1804, p. 6, pl. 59, fig. 6 (type in Berlin Mus., 1896).

Pericera cornuta Milne Edwards, Hist. Nat. Crust., vol. 1, 1834, p. 335; Cuvier's Règne Anim., disciples ed., atlas, pl. 30, fig. 1.—A. Milne Edwards, Crust. Rég. Mex., 1873, p. 51, and synonymy.[54]—Miers, Journ. Linn. Soc. London, Zool., vol. 14, 1879, pp. 664 and 673, pl. 13, figs. 4 and 5.—Gundlach and Torralbas, An. Acad. Habana, vol. 36, 1899 (1900), p. 362, text-fig.; reprint, 1917, p. 19, pl. 4, fig. 10.

Chorinus armatus Randall, Journ. Acad. Nat. Sci. Philadelphia, vol. 8, 1839, p. 108 (type-locality unknown; type in Mus. Phila. Acad. Nat. Sci.).

Stenocionops furcata Rathbun, Ann. Inst. Jamaica, vol. 1, 1897, p. 6.

Diagnosis.—Lateral marginal spines 4. Dorsum uneven, nearly smooth. One median spine, intestinal. Horns long, often curved.

Description.—Body and feet covered with a close dark brown felt composed of elongate pointed vesicles; there are also patches of stiff, hooked hairs. Carapace oblong-ovate, not very uneven; a rounded prominence on gastric and on cardiac region; intestinal region with two median projections, the first very small; the other, large, suberect, and curved, overhangs the posterior border. Frontal horns large, very divergent at base; distally often subparallel or even somewhat converging; on each side a superior orbital spine. The lateral margins bear, besides the very sharp external orbital angle, four very large, sharp spines, one hepatic and three branchial. Basal article of antenna armed near the antero-external angle with a spine which does not reach beyond the orbital border and two short spines behind the next article.

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[54] "*Pericera cornuta*" was not cited by Latreille.

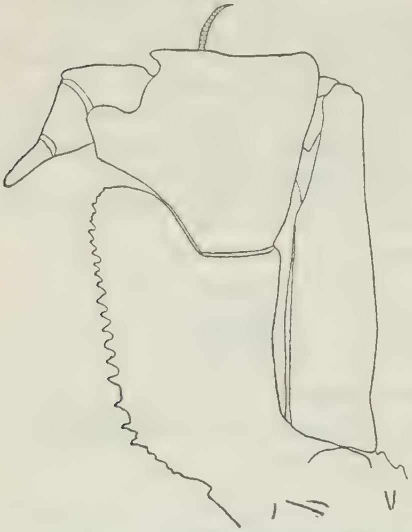

Fig. 131.—Stenocionops furcata (43084), maxilliped, × 2.7

The chelipeds attain in the male a considerable size and are nodose; arm spined above; hand long, cylindrical, and granulate. Fingers about half as long as palm, gaping for their basal half; a tooth on dactylus near its base.

Measurements.—Length of large male (Cat. No. 5843) from tip of rostrum to tip of posterior spine, 146.5; width, including spines, 93; length of horn 47.2; length of cheliped, 215 mm.

Variations.—Sometimes (Cat. No. 25233) instead of dorsal tubercles there are a few (10 or 11) sharp spines. In the young the horns are straight and divergent, but less divergent than in the subspecies *coelata;* with age the horns grow proportionally longer and are separated by a smaller angle and their terminal halves may become parallel or even curve inward (5843) or downward (49902).

Range.—From Georgia to Bahia, Brazil. Simon's Bay, Cape Colony (Miers). Shallow water to 35 fathoms.

Material examined.—See table, pages 452–453.

STENOCIONOPS FURCATA COELATA (A. Milne Edwards)

Plate 164

Pericera coelata A. Milne Edwards, Bull. Soc. Philom., ser. 7, vol. 2, 1878, p. 224 (type-localities, 10 miles from the Idolos [error for "Jolbos"] Islands and near Havana, 175 fathoms; types in M. C. Z.).

Pericera caelata A. Milne Edwards, Crust. Rég. Mex., 1879, p. 200, pl. 15*A*, figs. 3–3*c*.

Pericera cornuta (?) and *Pericera*, sp., Kendall, Bull. U. S. Fish Comm., vol. 9, 1889 (1891), p. 303.

Pericera cornuta caelata Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 244.

Stenocionops furcata coelata Rathbun, Bull. U. S. Fish Comm., vol. 20 for 1900, part 2 (1901), p. 73.—Hay and Shore, Bull. Bur. Fisheries, vol. 35, 1915–16 (1918), p. 460, pl. 39, fig. 3.

Diagnosis.—Lateral marginal spines four. From 20 to 25 dorsal spines and tubercles. Horns divergent, straight, or nearly so.

Description.—Differs from the typical form of the species in its more uneven and spinose carapace, the spines and sharp tubercles of the dorsum (exclusive of the margin) numbering from 20 to 25. Specimens up to a carapace length of 91 mm. have more divergent rostral horns than in typical *furcata* while the only specimens, two in number, above that size have horns less divergent and relatively shorter than in smaller specimens, and resembling except in length those of typical *furcata*. Small and half grown specimens are relatively wider across the orbits.

Measurements.—Length of largest male (33462) from tip of horns to tip of posterior spine 137, length of horn 25.6, width of carapace including spines 110.7, length of cheliped about 315 mm. Length of male (9373) from tip of horns to tip of posterior spine 91, length of horn 25, width of carapace including spines 63.7, length of cheliped 88 mm.

Color.—Dark red (Hay).

Range.—From Beaufort, North Carolina, to Gulf of Mexico and Caribbean Sea, to a depth of 278 fathoms; exceptionally below 50 fathoms.

Material examined.—See table, pages 453–454.

STENOCIONOPS CONTIGUA Rathbun

Plates 162 and 163; plate 266, fig. 2

Pericera contigua RATHBUN, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 247, pl. 32, fig. 2 (type-locality, Gulf of California, station 3005, *Albatross;* holotype, Cat. No. 16067, U. S. N. M.).

Stenocionops contigua RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 577.

Diagnosis.—Rostral horns curved, contiguous. Basal segment of antenna armed with a long spine. Three lateral spines on carapace behind orbit.

Description.—Shape of carapace and hairy coating similar to that of *furcata;* lateral spines behind the orbit three, one hepatic, two branchial. Protuberances of the dorsal surface partially concealed; they are arranged as follows: Three sharp tubercles in a triangle on the gastric region, the posterior one median and highest. On each branchial region two spines or a spine and a tubercle in an oblique line with the postero-lateral marginal spine, and a sharp tubercle close to the postero-lateral border of the cardiac region. Above the posterior margin a median spine, and in front of it and on either side a tubercle which may be sharp. The cardiac region may be either smoothly rounded or surmounted by a sharp spine, and there may be a spine, large in the old near the anterior border of the branchial region. Rostral horns curved, contiguous in the middle, separated at base by a button-hole slit, terminal halves or less moderately divergent. Only one spine on the basal antennal segment, situated on the anterior border and so elongate as to be visible in a dorsal view.

Material examined of Stenocionops furcata

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°C						
Georgia: Savannah									1	Buffalo Soc. Nat. Sci.	
Florida						1901		J. E. Benedict	1 ♂	25233	
?Gulf of Mexico									1♂	5843	
Jamaica:											
Montego Bay						July, 1910		E. A. Andrews	1♀	43086	
Do				Piles of wharf				do	1♀ 2♂	43087 43088, 43089	
Do			(1)					C. B. Wilson	1♀	43084	
Do				Coral reef				do	1♀	43085	
Kingston Harbor								F. S. Conant	1♀	19583	
Do						1893		R. P. Bigelow	3♂ 1♀	17985	
Jamaica									1	Buffalo Soc. Nat. Sci.	
Do						1884		*Albatross*	2♂ 1♀	7670	
Do								T. H. Morgan	1 y	17201	
Porto Rico:											
Mayaguez Harbor	Red buoy entrance, E. SE., ½ mile.		25-30	S. M. Sh.	25	Jan. 20, 1899	6062	*Fish Hawk*	2♂ 1♀	24416	
Off Punta de Melones	Cabo Rojo Lighthouse, S. SE., 5¼ miles.		7.25	C. S. shy	26	Jan. 25, 1899	6072	do	1 y	24172	
Ensenada Honda, Culebra Island.						Feb. 10, 1899		do	1 y	24170	
Off Vieques Island	Point Mula Lighthouse, S. SW. ⅜ W., 5¾ miles.		14	C. S. Sh.	25.6	Feb. 8, 1899	6085	do	1 y	24171	
St. Thomas:											
St. Thomas								A. H. Riise	1♂	2458	
Do						1884		*Albatross*	2 y	16177	
Do				In fish pot		July, 1915		C. R. Shoemaker	1♂ 1 ovig. ♀	49901	Gift of Carnegie Institution.
St. Thomas, outside of harbor.				do		do		do	4♂ 2♀	49903, 49953, 49954.	Do.
Buck Island, near St. Thomas.						July 23, 1915		do	2♂	49902	Gift of Carnegie Institution. Brought in by fishermen.
Dominica: Roseau								A. H. Verrill	1♂	32510	

Barbados			35	rky		May 20, 1918	24	Barbados-Antigua Exped., Univ. Iowa.	1♂	Mus. S. U. I.	
Locality not given									1 lge. ♂	Phila. Acad.	Type of *Chorinus armatus* Randall.

[1] Shallow water.

Material examined of Stenocionops furcata coelata

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			° *C*						
North Carolina: Off Beaufort, on fishing grounds.			14					*Fish Hawk*	1♂ 1 y	51018 51068	
South Carolina: Off Long Bay.	33 34 00 to 33 41 00	76 41 00	62-110	S. Sh	21.9	Dec. 12, 1919	20037	*Albatross*	1 right chela	55695	
Florida:											
Off Miami								J. B. Henderson	1♂, soft shell, 1♀	47093	
Off Miami, in Gulf Stream.								do	1♀ 1 y	49086	
Off Cape Florida, in Gulf stream.	2¼ miles S. SE. of Fowey Rocks Light.		45	rky	° *F* 70	Mar. 25, 1903	7511	*Fish Hawk*	1♂ 2 y	47094	
Off Key West	Sand Key Light bearing W. NW., Key West Light bearing N.		60			June 19, 1893	24	Biol. Exped. State Univ. Iowa.	1♂ 1♀	Mus. S. U. I.	
Do	About 1 mile from Light.		5.25			June 26, 1893	44	do	1♂	Mus. S. U. I.	
Do			(1)			do	45, 46	do	1♂ 2♀ 2 y	Mus. S. U. I.	
Dry Tortugas			4					J. B. Henderson	1 y	47095	
Do			16					do	1♂ 1 y. ♀	47092	
Do			(2)			1893		Biol. Exped. State Univ. Iowa.	1♀	Mus. S. U. I.	
North of Dry Tortugas	25 17 00	82 54 30	27	Sh. S	67.5	Feb. 18, 1889	5063	*Grampus*	1 y. ♀, soft shell	15276	
Do	25 23 00	82 54 30	26.5	Sh. S	67	Feb. 26, 1889	5070	do	1 y	16068	
West of Oyster Bay	26 19 00	82 50 00	21	S. Sh. bk. Sp.	66	Mar. 21, 1889	5110	do	1♂	15205	
Do	26 19 00	83 11 00	27	S. Algae	68	do	5108	do	1♂	20107	
North of Dry Tortugas	25 04 30	82 59 15	26	fne. wh. S. brk. Sh.		Mar. 19, 1885	2414	*Albatross*	1♂ 2♀	9847	
West of Cape Romano	26 00 00	82 57 30	21	fne. S. bk. Sp. brk. Sh.		do	2413	do	1♀	15149	

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[1] Shallow water.

[2] Dredged.

Material examined of Stenocionops furcata coelata—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
Florida—Continued	° ′ ″	° ′ ″			° F						
West of Oyster Bay	26 18 30	83 08 45	27	fne. gy. S. bk. Sp. brk. Sh.		Mar. 19, 1885	2412	*Albatross*	1♀	15150	
West of Caseys Pass	27 04 00	83 21 15	26	crs. gy. S. brk. Sh.		Mar. 18, 1885	2409	do	1♀	15148	
Off Charlotte Harbor	26 33 00	83 10 00	28	sdy	66	Mar. 2, 1901	7123	*Fish Hawk*	1 y.	25599	
Pensacola								Silas Stearns	1♂ 1♀ 1 y. 1♂ 1♀	4505 9373	From fish stomach.
? Florida								Bur. Fisheries	1 lge. ♂	33462	
South of Dog Island	28 47 30	84 37 00	24	Co. brk. Sh		Mar. 15, 1885	2407	*Albatross*	3♂ 1♀	9803	
South of St. George Island.	28 46 00	84 49 00	26	crs. S. Co		do	2406	do	7 y.	15146	
South of Cape St. George.	28 45 00	85 02 00	30	gy. S. brk. Co.		do	2405	do	3 y.	15147	
Southwest of Cape San Blas.	29 11 30	85 29 00	26	S. G. brk. Sh		Feb. 7, 1885	2374	do	1♀	15145	
Do	29 14 00	85 29 15	25	Co		do	2373	do	1♀	15144	
Do	29 18 15	85 32 00	25	crs. gy. S. brk. Sh.		do	2370	do	1 y.	16045	
Alabama: South of Mobile Bay.	29 21 30	88 01 00	35	yl. S. bk. Sp.		Mar. 4, 1885	2388	do	2 y.	16088	
Mexico:											
Yucatan Channel	22 28 00	87 02 00	27	fne. wh. Co		Jan. 30, 1885	2366	do	3♀ 1 y.	9592	
Do	22 18 00	87 04 00	24	wh. R. Co		do	2365	do	3 y.	16051	
Do	22 07 30	87 06 00	21	wh. R. Co		do	2363	do	2♀	15043	
Do	22 08 30	86 49 00	26	wh. Co		do	2360	do	1♂	9567	
Do	21 26 30	86 28 40	51		69	1880	XXX	*Blake*	2	4467, M.C.Z.	
Do	16 miles N. of Jolbos Islands, SW. part of Yucatan Bank.		14			1877–78	39	do	1	2848, M.C.Z.	Cotype.
Cuba: Off Havana			175			1877–78	79	do	2	2847, M.C.Z.	Cotypes.
Porto Rico: Off Vieques Island.	Culebrita Lighthouse, NE. by N., 10 miles.		15	Co	° C 26	Feb. 10, 1899	6091	*Fish Hawk*	1 y. ♂	24210	
Off St. Lucia	13 52 00	61 07 00	278			1879		Capt. E. Cole	1♂	3966, M.C.Z.	
Barbados	13 03 55	59 38 25	106	Co	° F 58	Mar. 5, 1879	277	*Blake*	1	2849, M.C.Z.	

Material examined of Stenocionops contigua

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
West coast of Mexico:	° ′ ″	° ′ ″			°F				7♂ 2♀	1921, M.C.Z.	
Magdalena Bay						1872		U. S. C. S. S. *Hassler.*	1♂	18512	Received from Mus. Comp. Zoöl.
Gulf of California	24 11 30	109 55 00	10	Sh		Apr. 30, 1888	2828	*Albatross*	1♂ 2 y	21938	
Do	24 11 45	109 55 00	10	Sh		do	2827	do	1♂ 1♀	21937	
Do	24 12 00	109 55 00	9.5	Sh		do	2826	do	1♂	21936	
Do	24 22 30	110 19 30	8	brk. Sh		do	2824	do	1♂ 2♀	21935	
Do	25 02 45	110 43 30	21	S. Sh. Coralline.		Mar. 17, 1889	3005	do	1♀	16067	Holotype.
Do	31 21 00	113 49 00	11	S. brk. Sh. G.	67	Mar. 25, 1889	3024	do	2♂	16975	

Chelipeds of medium-sized male a little longer than the carapace and the next pair of legs. In large males the chelipeds are much more elongate. Merus armed with 5 or 6 stout spines above. In small specimens the ambulatory legs diminish fairly regularly in length from the first to the last, but in the larger males the first leg is very much longer than the second.

Measurements.—Largest male (M. C. Z.), length of carapace 72, width 60, length of cheliped about 120 mm. Length of male (21937) to tip of horns 33.8, greatest width 24.8, length of cheliped 37 mm.

Range.—Gulf of California to Magdalena Bay, west coast of Lower California, Mexico. Depth, 8 to 21 fathoms.

Material examined.—See table, page 455.

STENOCIONOPS SPINOSISSIMA (Saussure)

Plate 165, fig. 2; plate 264, figs. 3 and 4; plate 265

Pericera spinosissima SAUSSURE, Rev. et Mag. Zool., ser. 2, vol. 9, 1857, p. 501; Mém. Soc. Phys. Genève, vol. 14, 1857, p. 426 [10], pl. 1, fig. 2 (type-locality, Guadeloupe; holotype in Geneva Mus.).—A. MILNE EDWARDS, Crust. Rég. Mex., 1873, p. 52.

Stenocinops polyacantha MOREIRA, A Lavoura, Bol. Soc. Nac. de Agric. Brazil, anno 7, 1903, p. 66; reprinted as a separate, 1903, p. 11, 3 text figs.; Arch. Mus. Nac. Rio de Janeiro, vol. 13, 1906, p. 20, pl. 4, fig. 2, pl. 5 (type-localities, SE. and E. SE. of Ilha Rasa, off the entrance of the bar of the bay of Rio de Janeiro, at 10 to 12 miles from the coast in 48, 60, 80, and 100 meters; type in Mus. Nac. Rio de Janeiro).

Diagnosis.—Rostro-orbital region in the adult occupying more than one-fourth of total length of carapace. Median spines of carapace 10; marginal hepatic spines 2.

Description.—Carapace covered with numerous spines in the old. The rostral horns are short, straight and divergent. Median spines 10, of which 4 are gastric, one genital, 2 cardiac, 3 intestinal. A large spine on each protogastric region in line with anterior median spine. A row of 2 or 3 small spines on the frontal region behind each horn. Hepatic region protruding, armed with 2 large anterior marginal spines, and 2 or 3 small dorsal spines. Of the lateral branchial spines it may be said that they are 3, with a row of 3 spines below them, the posterior 2 of which are as large as the marginal spines. A row of 4 branchial spines above the marginal spines, and above the middle 2 of these are 2 more spines; a row of small spines parallels the curve of the cardiac region; behind this a single spine; while a row of 5 or more spines lies above each postero-lateral margin.

The preorbital spine is much shorter than in *cornuta.* The spine near the antero-lateral angle of the basal article of the antenna points forward and is of similar size to the postorbital spine; on the same article there is a strong spine pointing obliquely downward at the insertion of the next article. A spine also near the angle of the buccal cavity; midway between and in line with this spine and the spine near the orbit there is a tubercle (or sometimes a spine).

Merus of chelipeds with a row of 5 spines above and 3 equidistant rows of tubercles; carpus with a few tubercles above. Merus of first ambulatory leg with a row of tubercles on its upper inner side.

The above description was made from a large female from Dominica which is much larger than Saussure's type and has a few more spines; it is about the size of Moreira's *polyacantha*, figured, which has still more spines, but some of the additional spines are represented in the Dominican specimen by spinules.

Measurements.—

	Saussure's type of *spinosissima*	Dominica (32712)	Moreira's type of *polyacantha*
	Female	*Female*	*Male*
Length of carapace, including horns	61	91	97
Width of carapace, including spines	48	75	75
Width of carapace, excluding spines	41	65.5	
Length of rostral horns	10	14	about 8

Color.—When the hairs are removed, a flesh-colored rose, fingers violet or brown (Saussure).

Range.—Southern Florida; Haiti, West Indies, to Rio de Janeiro, Brazil. 26 to 60 fathoms.

Material examined.—

Off Sombrero, Florida; 54 fathoms; April 2, 1872, 5th cast; *Bache*, Stimpson; 1 small female (1914, M. C. Z.); identified by A. Milne Edwards.

Charlotte Harbor, Florida; 50 fathoms; April 1, 1872; *Bache*, Stimpson; 1 small female (1915, M. C. Z.); identified by A. Milne Edwards.

Grand Anse, Haiti; P. R. Uhler; 1 ovigerous female (1916, M. C. Z.).

Guadeloupe; 1 male, holotype of *P. spinosissima* (Geneva Mus.).

Soufriere Bay, Dominica; 60 fathoms; A. H. Verrill; 1 female (32712).

STENOCIONOPS SPINIMANA (Rathbun)

Plate 267

Pericera, sp. SMITH, Rept. U. S. Commr. of Fisheries for 1885 (1887), p. 627.

Libinia spinimana RATHBUN, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 240, pl. 30, adult (type-locality, off Cape Lookout, N. C., 124 fathoms; holotype, Cat. No. 14029, U. S. N. M.).

Pericera atlantica RATHBUN, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 247, young (type-locality, off Key West, 45 fathoms; type, Cat. No. 15142, U.S.N.M.).

Stenocionops spinosissima RATHBUN (not Saussure), Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 256.—HAY and SHORE, Bull. Bur. Fisheries, vol. 35, 1915–1916 (1918), p. 460, pl. 39, fig. 2.

Diagnosis.—Rostro-orbital region in the adult occupying less than one-fourth of total length of carapace. Median spines of carapace 12 or 13. Marginal hepatic spines 3.

Description of adult.—Nearly related to *S. spinosissima* but differs as follows: Carapace more rotund and more spinous, spines shorter; 12 or 13 median spines, 5 gastric, 2 genital, 2 cardiac, 3 intestinal; other dorsal spines numerous; anterior marginal hepatic spines 3; the most anterior of these is small and in the very old (the largest specimen examined) may disappear. Rostral horns tapering regularly to a very slender tip instead of stout throughout; a little more divergent than in *spinosissima*. Basal antennal article more twisted, its antero-external angle more advanced and more elevated; the 2 outer spines subequal.

Chelipeds much rougher than in *spinosissima;* merus and carpus armed with numerous spines; manus rough throughout its length, the short spines (2 rows above, 1 below) of the proximal end becoming spinules or sharp granules distally.

Ambulatory legs sparingly spined, merus joints with a terminal spine above; that of first leg with a longitudinal inner-upper row of 5 or 6 and a ring of about 4 near distal end; that of second leg with a ring of 3 or 4 spines; of third and fourth legs with only 1 or 2 spines besides the terminal one. Three or four small spines on carpus of first leg, 3 spinules or tubercles on carpus of second leg, and only one on carpus of third and fourth legs.

Material examined of Stenocionops spinimana

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°F						
North Carolina:											
Off Cape Hatteras	35 10 40	75 06 10	68	gy. M.	71.3	Oct. 19, 1884	2268	*Albatross*	1 y. ♀	7220	
Off Cape Lookout	34 38 30	75 33 30	124	S. R.		Oct. 18, 1885	2602	do	1♂ 2♀	14029	Male is holotype.
Do	34 04 00	76 15 30	69	fne. dk. S.	66	Aug. 14, 1902	7313	*Fish Hawk*	1 y	51063	Soft shell.
Gulf Stream, 30 miles due S. of Cape Lookout Lightship.			(1)					do	1 y	51034	
South Carolina: East of	33 34 00 to 33 41 00	76 41 00	62–110	S. Sh.		Dec. 12, 1919	20037	*Albatross*	5♂ 3♀ (1 ovig.)	55441	
Florida:											
Off Key West	24 25 45	81 46 00	45	Co.	75	Jan. 15, 1885	2318	do	1 y. ♀	15142	Holotype of *P. atlantica.*
Do	Sand Key Light bearing W. NW., Key West Light, N.		60			June 19, 1893	24	Biol. Exped. State Univ. Iowa.	1♂ 2 y	Mus. S. U. I.	
Do	Sand Key Light, W. ½ N., about 6½ miles.		20			June 24, 1893	39	do	2 y. ♂	20019	
Off Sand Key	Sand Key Light, N., about 6 miles.		116			June 19, 1893	28	do	1 y. ♂	Mus. S. U. I.	
East of Cape San Blas	28 42 30	85 29 00	88	gy. M.		Mar. 15, 1885	2403	*Albatross*	1♂	16053	
Alabama: South of Mobile Bay.	29 27 30	87 48 30	30	crs. S. bk. Sp. Sh		Mar. 4, 1885	2390	do	2 y	16044	About 6 mm. long.

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[1] About 50 fathoms

Old.—The old have a longer and thicker pile, especially on the chelipeds, which attain a length more than twice as great as the carapace, and are very stout, palm compressed.

Half grown.—Comparing a half-grown male (16053) with Saussure's figure of a little larger specimen of *spinosissima*, *spinimana* is seen to have the greater number of spines, while both have fewer spines than the full grown of the same species. Median spines of *spinimana* 11, 1 more (gastric) than in *spinosissima*. Large anterior hepatic spines only 2 (as in *spinosissima*) but with a small spine or spinule where the innermost large spine occurs in the old.

Young.—Besides the eight specimens above described, all those in the National Museum are very small and immature and present a very different appearance, as at least half of the spines which are evident later are undeveloped. The hepatic region is not enlarged nor produced (in this respect resembling typical *Stenocionops*) and bears only one large marginal spine and a very small one in front of it. There are only 2 large spines on the branchial margin, as in *S. contigua;* one small spine on the postero-lateral margin; 2 or 3 spines high up on the branchial region. Surface of basal antennal article mostly concave.

Measurements.—

	Largest ♂, Sta. 20037	Large ♂, holotype of *spinimana*	Half grown ♂ (16053)	Young ♀, holotype of *atlantica*
Length of carapace, including horns	130	89	53	17.6
Width of carapace, including spines	118.2	76	42	12.6
Width of carapace, excluding spines	110.4	69	35.6	10.4
Length of rostral horns	10.5	10.2	9.5	3.2

Range.—From off Cape Hatteras, North Carolina, to Florida Straits and Gulf of Mexico. Depth, 20 to 124 fathoms.

Material examined.—See table, page 458.

STENOCIONOPS OVATA (Bell

Plate 264, figs. 5–7

Pericera ovata Bell, Proc. Zool. Soc. London, vol. 3, 1835 (1836), p. 173; Trans. Zool. Soc. London, vol. 2, 1836, p. 60, pl. 12, figs. 5, *5o*, *5p*, *5q* (type-locality, Galapagos Islands, 6 fathoms; type not extant).

Stenocionops ovata Rathbun, Proc. U. S. Nat. Mus., vol. 38, 1910, p. 574.

Diagnosis.—Median spines of carapace 8. Lateral marginal spines 4 or 5. Size small. Horns divergent.

Description.—Female: Carapace elongate-oval, sparingly covered with short close hair; four small spines on median line of gastric region, three spines on cardiac and genital regions, the middle one being the largest, one spine on the intestinal, a very small one on each hepatic, three on the branchial region, and four or five on each lateral margin. The eyes extend beyond the margin of the orbits. Rostrum formed of very divergent horns; at their base a median depression.

Outer spine of basal article of antenna short and triangular; a very small tooth below insertion of second article. (After Bell.)

Color.—A rich, rather light, reddish brown (Bell).

Measurements.—Female, holotype, length 1 inch (25.4 mm.); breadth 6 lines (about 15.2 mm.) (Bell).

Range.—Known only from the Galapagos Islands; 6 fathoms.

STENOCIONOPS MACDONALDI (Rathbun)

Plate 268

Libinia macdonaldi Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 238, pl. 29 (type-locality, Gulf of California, 71 fathoms; holotype male, Cat. No. 16071, U. S. Nat. Mus.).

Diagnosis.—Median spines of carapace 9; none on posterior margin. Two large marginal hepatic spines. Rostrum about one-twelfth length of carapace.

Description of adult.—Shape much as in *S. spinimana*, the hepatic region separately prominent, the after part of the carapace subspherical. Hairy covering a very thick and dense pile. Spines conical, blunt or subacute. Median spines 9: 4 gastric, 1 genital, 2 cardiac, 2 intestinal, none on posterior margin. Of the lateral spines, 2 are hepatic (exceptionally an additional spinule), the anterior the smaller; 3 antero-lateral branchial spines, of which the middle one is the largest; and 2 above postero-lateral margin, the last one of which is the smaller and may be absent. From the first of these a row of 6 low spines extends to the middle of the hepatic region. Another small hepatic spine nearer the margins, sometimes absent. Two large branchial spines, the hinder one in transverse line with the anterior cardiac spine and with the spine at the postero-lateral angle; a smaller, epibranchial spine; one or two small branchial spines (in one case absent on one side) opposite the interval between the 2 cardiac spines; a spine either side of the anterior gastric spine; 1 or 2 pairs of small spines between the orbits. A small subbranchial spine invisible from above and a few pterygostomian spines. Rostral horns short, triangular, outer margins slightly converging. Orbits less open and with shorter spines than in *spinimana*. Basal antennal article with two anterior spines; a spine near outer angle of buccal cavity.

Four spines and a few tubercles on upper margin of merus of cheliped; at subequal distances three other rows of tubercles.

Measurements.—Largest male (16070), length of carapace from tip of rostrum to posterior median spine tip 93, width including spines 83.3, width excluding spines 77.7, length of rostrum 7. 8 mm.

Range.—Gulf of California and Bay of Panama. Depth, 33 to 145 fathoms.

Material examined.—See table, page 462.

STENOCIONOPS TRIANGULATA (Rathbun)

Plate 165, fig. 1; plate 266, fig. 1

Pericera triangulata Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 246, pl. 32, fig. 1 (type-locality, Gulf of California, 29 fathoms; female holotype, Cat. No. 16066, U. S. N. M.).

Stenocionops triangulata Rathbun. Proc. U. S. Nat. Mus., vol. 21, 1898, p. 577.

Diagnosis.—Median spines 9; none on posterior margin. One hepatic spine. Rostrum about one-sixth length of carapace.

Description of largest specimen.—Known only from small and immature specimens. Carapace triangular-ovate, broader behind in the largest specimen, male, than in the female figured. Median spines 9, distributed as in *macdonaldi*, none on the posterior margin; spines unequal, the largest are the anterior cardiac, the two posterior, and the penultimate gastric. Lateral marginal spines 3, large, 1 hepatic (hepatic region not enlarged), 2 branchial, of which the spine at the postero-lateral angle is the largest and points obliquely backward. From it a curved line of 6 tubercles and spinules stretches to the hepatic region. Two large spines on the elevated portion of the branchial region; a low spine in front of each; a spine on either side of the anterior median spine.

Rostral horns widely divergent, at nearly a right angle, regularly tapering to slender tips. Orbital spines narrow. Basal antennal article 2-spined on anterior margin.

Measurements.—Immature male, largest specimen (21940), length of carapace from tip of rostral horn to tip of posterior median spine 30, width of carapace including spines 22.5, excluding spines 18.6, length of rostral horn 5.3 mm.

Range.—West coast of Lower California; Gulf of California; Bay of Panama. Depth, 13½ to 51½ fathoms.

Material examined.—See table, page 462.

Remarks.—The surprising changes in form and ornamentation between the young and the adult of *S. spinimana*—that is, the gradual development from the typical *Stenocionops* form of the young into the rotund *Libinia*-like form of the adult, with hepatic regions separately distended and produced, the narrowing of the orbital region, the shortening of the rostral horns, and the multiplication of spines—

Material examined of Stenocionops macdonaldi

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
Gulf of California, Mexico:	° ′ ″	° ′ ″			°F						
Off Cape Lobos	29 40 00	112 57 00	76	gn. M	59	Mar. 24, 1889	3016	*Albatross*	3 ♀	16069	
Northwest of Tiburon Island.	29 19 00	112 50 00	145	br. M	54. 9	do	3015	do	1 ♂ 1 ♀	16070	
Northwest of Guaymas	28 07 00	111 39 45	71	fne. gy. S. brk. Sh.	57. 9	Mar. 23, 1889	3011	do	1 ♂	16071	Holotype.
Panama: Bay of Panama	7 57 00	78 55 00	33	gy. S. bk. Sp. brk. Sh.	64. 1	Mar. 5, 1888	2795	do	1 ♀	40630	

Material examined of Stenocionops triangulata

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
West coast of Mexico:	° ′ ″	° ′ ″			°F						
Off Abreojos Point	26 14 00	113 13 00	48	yl. M	53. 9	May 3, 1888	2834	*Albatross*	2 ♂	21940	
Magdalena Bay	24 35 20, 111 59 35 Sail Rock, Entrada Point, S. 53° W.; Redondo Point, S. 15° W		13. 5	S. brk. Sh.		Mar. 21, 1911	5678	do	1 y. ♀	55765	
Gulf of California	28 28 00	112 04 30	29	gy. S.	62. 9	Mar. 23, 1889	3014	do	1 ♀	16066	Holotype.
Do	24 55 15	110 39 00	33	fne. gy. S. brk. Sh.	64. 5	Mar. 16, 1889	3001	do	1 very young	17364	
Do	24 27 00	111 59 00	47	fne. yl. S.	68. 5	Apr. 8, 1889	3039	do	1 ♀	18175	
Panama: Bay of Panama	7 56 00	79 41 30	51. 5	gn. M		Mar. 30, 1888	2805	do	1 y.	21939	

suggests that a similar transformation may occur between young *S. triangulata* and adult *S. macdonaldi:* but until this is proved by intermediate, half-grown individuals, it is best not to assume that the rostrum and orbits can so change with age as shown by comparison of plate 266, figure 1, and plate 268.

Genus MACROCOELOMA Miers

Pericera (part) MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 334.
Macrocoeloma MIERS, Journ. Linn. Soc. London, vol. 14, 1879, p. 665; type, *M. trispinosum* (Latreille).

Carapace subpyriform or suboblong, but broadened anteriorly by projecting orbits; dorsal surface unarmed, or tuberculated, or with a few long spines; margins without a series of elongated lateral spines, but often with a strongly developed lateral epibranchial spine, preceded by some smaller spines. Spines of rostrum well developed. Eyes retractile within roomy, projecting, tubular orbits. The antennæ have the basal joint considerably enlarged and armed distally with one or two spines; the mobile portion is sometimes concealed by the rostrum, sometimes exposed. Merus of external maxillipeds broader than ischium and notched at internal angle for insertion of palp.

The chelipeds in the male have the palms enlarged and the fingers either arched and meeting only at tip or in contact throughout. Ambulatory legs rather short.

Occurs from Cape Fear, North Carolina, to Bahia, Brazil, and from Cape St. Lucas, Lower California, Mexico, to Ecuador; also sparingly in the Indo-Pacific region. Low tide to 163 fathoms.

KEY TO THE AMERICAN SPECIES OF THE GENUS MACROCOELOMA [55]

- A¹. Carapace with fewer than 7 spines on its posterior half, or if with 7 spines, some of them are small.
  - B¹. Basal antennal segment armed with only one spine or sharp tubercle.
    - C¹. Rostral horns separated by an interspace which is narrow or pointed at base.
      - D¹. Postero-lateral projections narrow, spinelike---- **trispinosum**, p. 466.
      - D². Postero-lateral projections broad, bladelike.
        - E¹. Postero-lateral projections very broad, their margins continuous with marginal lines of carapace--- **trispinosum nodipes**, p. 468.
        - E². Postero-lateral projections less broad, their margins making an angle with marginal lines of carapace- **trispinosum**, variety, p. 468.
    - C². Rostral horns separated by an interspace which is broad and rounded at base.
      - D¹. Carapace deeply sculptured or areolated between the two postero-lateral spines. Rostral spines short and stout.
        - E¹. Postero-lateral spines directed obliquely backward. **subparallelum**, p. 480.

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[55] *Arctopsis tesselata* White (*nomen nudum*), List Crust. Brit. Mus., 1847, p. 5, from the West Indies, may be a *Macrocoeloma*. Type not in British Museum.

E². Postero-lateral spines directed obliquely forward **villosum**, p. 482.

D². Carapace not unusually sculptured between the epibranchial spines. Rostral horns longer and slenderer **diplacanthum**, p. 478.

B². Basal antennal segment armed with 2 or more spines. Orbits elongate-tubular.

C¹. Rostral spines separated by a U-shaped sinus **eutheca**, p. 484.

C². Rostral spines separated by a V-shaped sinus. Basal antennal segment armed with 2 spines forming an oblique line, the outer spine more or less distant from the orbital margin.

D¹. Rostral horns narrow, tapering regularly from base to tip. A long spine followed by a short spine near distal margin of basal antennal segment **laevigatum**, p. 483.

D². Rostral horns broad at base, with abruptly narrowed tip. Two long spines near distal margin of basal antennal segment.

E¹. A spine present on the urogastric or anterior cardiac region. Width of carapace across orbital regions much less than across branchial regions **concavum**, p. 487.

E². No spine on the urogastric or anterior cardiac region. Width of carapace across orbital regions subequal to width across branchial regions **intermedium**, p. 486.

A². Carapace with 7 strong spines on its posterior half.

B¹. Basal antennal segment armed with only one spine.

C¹. Rostrum nearly horizontal, horns long. Basal antennal spine horizontal and wholly visible from above **camptocerum**, p. 469.

C². Rostrum strongly deflexed, horns short. Basal antennal spine directed downward, scarcely visible from above **heptacanthum**, p. 473.

B². Basal antennal segment armed with two spines in a transverse line. **septemspinosum**, p. 477.

Analogous species on opposite sides of the continent: *septemspinosum* (Atlantic), *heptacanthum* (Pacific); *subparallelum* (Atlantic), *villosum* (Pacific).

THE *TRISPINOSUM-DICANTHUM* GROUP

Consists of the so-called species *trispinosum* and *dicanthum*. This group of forms is represented in the Museum by so large a number of specimens that we are enabled to separate them into three series, one series being intermediate between the others in at least two of its characters. In one series (1) (see *trispinosum*, below), the postero-lateral prominences are narrow, regularly tapering spines, projecting beyond the general outline of the carapace and directed more or less backward, sometimes strongly curved from base to tip (concave above). The carapace is considerably constricted behind the orbits. In the next series (2) (see *trispinosum*, variety, below), the postero-lateral prominences are wider than in series 1, less spine-like and more laminate, their hind margins nearly transverse; while the carapace is less narrowed behind the orbits. In the third series (3) (see *trispinosum nodipes*, below) , the postero-lateral prominences are very broad and obtuse, broader than in series 2, their margins almost continuing the direction of the marginal lines of the carapace.

The carapace is very little, sometimes not at all, constricted behind the orbits.

The posterior median spine varies in the three series in a manner similar to that seen in the lateral spines.

In series 1, the four large tubercles or bosses about the middle of the carapace (one gastric, one cardiac, two branchial) are very prominent, and some or all of them have an acute tip, that on the gastric boss occasionally resembling a short spine; in series 2, the bosses run lower and there is a tendency to form a sharp tubercle or granule at the summit of the gastric boss; in series 3, the bosses are still lower and are smoothly rounded and blunt.

Within each series there is great diversity in the length, direction and curvature of the rostral horns. The length varies from one-fifth to over one-third of the length of the remainder of the carapace. The horns may be straight, with their outer margins subparallel (19584, 21930), or converging distally (46915) and the interspace insignificant in the basal half. They may curve strongly outward or upward or both (17959, 50956) toward the tips, and be either almost contiguous at base (43028) or have a narrowly U-shaped interspace (9279, 9280, 15137). This interspace may be regularly V-shaped or nearly so (14004, 46925).

The orbits in series 1 are very prominent, owing to the constriction of the carapace behind them, the upper edge is deeply emarginate, the preocular and postocular teeth strongly marked, the former directed forward and curved. In series 2, the superior emargination of the orbit is less deep, the teeth less strongly marked, although the preocular tooth is directed forward and a little curved. In series 3, the orbit has a very slight emargination in the upper border, the preocular tooth is acute but not prominent, the postocular angle is blunt or subacute but not dentiform in the old; both preocular and postocular teeth incline to greater prominence in the young.

Nomenclature.—The earliest record of this species was made in 1756 by Browne, who called it "*Cancer* 9. The Grass-Crab." There is nothing in his brief diagnosis to indicate which of the three forms described above he had in hand; his figure, however, has very slender postero-lateral spines, as in series 1. Latreille (1825) was the first to give a specific name to the species, *Pisa trispinosa*; his description also applies to series 1, "*trois élévations en forme de petites bosses, terminées en pointe, le long du milieu du dos;* * * * *angles postérieurs prolongés en une épine trè-forte.*" The locality "Nouvelle Hollande!" is an error, which was corrected later (1834) by Milne Edwards. In the mean time another record of the same form, typical *Pisa trispinosa*, was made by Guérin in his "Iconographie," where the slender postero-lateral spines are again shown. Unfortunately A. Milne Edwards gave another specific name, *dicantha* or *diacantha*, to this same form, while the *trispinosa* figured by him is of the series 2, described above, which I now call *trispinosum*, variety. The form above called series 3 was not named until 1867 when Desbonne's description and figure were published under the name, *Pericera nodipes*. It must now be known as *Macrocoeloma trispinosum nodipes*.

MACROCOELOMA TRISPINOSUM (Latreille)

GRASS CRAB (Browne). SPONGE CRAB (Jarvis). DECORATOR CRAB (Wilson)

Plate 166, fig. 1; plate 167

Cancer 9, Browne, Nat. Hist. Jamaica, 1756, p. 422, pl. 48 (not 46), fig. 2.

Pisa trispinosa Latreille, Encyc. Méth., Hist. Nat., vol. 10, 1825, p. 142 (type-locality, *Nouvelle Hollande?* [an error]).

Pericera trispinosa Guérin, Icon. Règne Anim., Crust., pl. 8, figs. 3, 3*a*.—Milne Edwards, Hist. Nat. Crust., vol. 1, 1834, p. 336 (Antilles).—Aurivillius, K. Sv. Vet.-Akad. Hand., vol. 23, pt. 1, 1889, p. 55, pl. 2, fig. 2. Not Gundlach and Torralbas, An. Acad. Habana, vol. 36, 1899 (1900), p. 365, text-fig.; reprint, 1917, p. 21, pl. 5, fig. 12.

Pericera dicantha A. Milne Edwards, Crust. Rég. Mex., 1875, p. 57 (type-locality, Mujeres [not Majores], 12 fathoms; type, Cat. No. 1919, M. C. Z.).

Pericera diacantha A. Milne Edwards, Crust. Rég. Mex., 1875, pl. 15, figs. 3–3 *c*.

Macrocoeloma trispinosa Miers, Journ. Linn. Soc. London, vol. 14, 1879, p. 665.

Macrocoeloma diacantha Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 79.

Macrocoeloma trispinosum Rathbun, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 576.

Macrocoeloma diacanthum Rathbun, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 576; Bull. U. S. Fish Comm. for 1900, vol. 20, pt. 2 (1901), p. 74 (part).

Diagnosis.—Rostral horns adjacent and subparallel at base. Postero-lateral projections sharp spines. Four dorsal bosses each with a sharp tubercle at tip.

Description.—Body and appendages covered with very short, brown hairs which form a sort of velvet. Carapace thick and very swollen, wide at line of orbits, narrowing distinctly in hepatic portion, widening again posteriorly. Four large rounded prominences, the anterior or gastric one the highest, forming together a cross in the center of the carapace and each bearing a more or less sharp tubercle at the summit. Front formed of two flattened, sharp horns, which are adjacent and subparallel at base, and distally divergent. Upper margin of orbit deeply emarginate, the ocular and postocular teeth prominent, the former curved forward. Near the inner angle of the basal article of the antenna there is a rather long, oblique spine entirely visible from above; flagellum slender, on either side of the rostrum but not reaching the end of the horns. At the postero-lateral angles of the carapace there is a stout, regularly tapering, sharp spine which is directed obliquely backward and outward and sometimes curved upward. A short, obliquely erect spine stands on the median line above the posterior margin.

Chelipeds of male narrow, about as long as carapace. Arm nodose, palm with subparallel sides, dactylus about half as long as upper margin of palm. Legs rather slender, slightly nodose.

Measurements.—Male (17959), extreme length of carapace 34, length from rostral sinus to posterior margin 24, extreme width 28.7, width at base of spines 19.4 mm.

Color.—Enveloping hairs yellowish (Milne Edwards) or reddish-brown) (Latreille).

Habits.—Usually concealed by a covering of sponge which adheres to the hairs on carapace and legs. This serves as a protection to the crab, as fish avoid sponges in any form.

Range.—North Carolina to Yucatan; West Indies; off Cape St. Roque, Brazil. Shallow water to 45 fathoms.

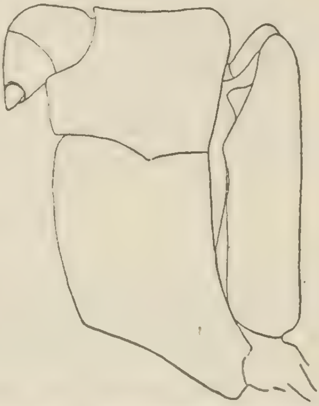

Fig. 132.—Macrocoeloma trispinosum (43028), maxilliped, × 7

Material examined.—

Beaufort, North Carolina; 10 to 30 feet; station 7943, *Fish Hawk;* 1 young (51062).

Off Beaufort, North Carolina; station 7951, *Fish Hawk;* 1 young (51005).

Off Cape Sable, Florida; lat. 25° 03′ 50″ N.; long. 81° 20′ 30″ W.; 3¼ fathoms; gy. S. Sh.; December 18, 1902; station 7364, *Fish Hawk;* 1 ovigerous female (54459).

Off Mujeres Island, Yucatan; 12 fathoms; coarse coral sand; William Stimpson; 1 female, type of *Pericera dicantha* (1919, M. C. Z.).

Off Contoy Island, Yucatan; 12–18 fathoms; weedy rocks; William Stimpson; 2 immature females, identified by A. Milne Edwards as *P. dicantha* (1920, M. C. Z.).

Cuba; 1914; Henderson and Bartsch, *Tomas Barrera* Expedition: Dimas Bay; May 17; 1 male (48723). Esperanza; May 11; 1 male, 1 female (48652).

Bogue Islands, Montego Bay, Jamaica; 1910: On mangrove roots; June 23; C. B. Wilson; 1 male (43026). On mangrove roots; July 2; E. A. Andrews; 2 males, encrusted with sponges (43027). July 6; E. A. Andrews; 1 young (43025); 2 females, ovigerous and encrusted with sponges (43028). On mangrove roots; July 21; E. A. Andrews (43016).

Kingston Harbor, Jamaica: 1893; R. P. Bigelow; 1 female, covered with polyps (17958); 1 male (17959). May–July, 1896; F. S. Conant; 2 males, 1 female (19584).

Porto Rico; off Boca Prieta; Fanduco Cay, E. 1¾ m.; 8½ fathoms; Co. S.; January 25, 1899; station 6075, *Fish Hawk;* 1 female (24092).

St. Thomas; 1915; C. R. Shoemaker: From piles; 2 males, 2 females (1 ovigerous) (50954). From piles near town; July 7; 1 female, thin shell (50955). Gregerie Channel, between Water Island and St. Thomas; ½–2¾ fathoms; July 7; station 7; 2 females (1 ovigerous) (50956).

English Harbor, Antigua; shore; 1918; Barbados-Antigua Exped. Univ. Iowa; 1 ovigerous female, overgrown with sponge (Mus. S. U. I.).

Port Castries, St. Lucia; November 30, 1887; *Albatross;* 1 male (21930).

Curaçao: 1884; *Albatross;* 1 male, 2 females (1 ovigerous), 2 young (16181). Rifwater. in shallow water, among algae; May 26, 1905; J. Boeke; 1 male (Leiden Mus.). Spanish Water; from mangrove roots; April 8, 1920; C. J. van der Horst; 1 young (56863).

Brazil; off Cape St. Roque; lat. 6° 59′ 30″ S.; long. 34° 47′ 00″ W.; 20 fathoms; brk. Sh.; December 16, 1887; station 2758, *Albatross;* 1 female (21931).

MACROCOELOMA TRISPINOSUM, variety

Plate 168, fig. 1

Pericera trispinosa VON MARTENS, Arch. f. Naturg., vol. 38, pt. 1, 1872, p. 84, pl. 4, figs. 4 *a* and 4 *c*, not 4 *b*, and 4*d*.—A. MILNE EDWARDS, Crust. Rég. Mex., 1873, p. 52, pl. 15, figs. 2–2*d*.—IVES, Proc. Acad. Nat. Sci. Philadelphia, 1891, p. 178.

Description.—This form links the subspecies *nodipes* to the typical *trispinosum.* The carapace is a little narrowed behind the orbits. The postero-lateral prominences are wider than in typical *trispinosum* and approach the laminate character of *nodipes.* The four central bosses are intermediate in character, as is also the orbital margin.

Color.—Vermilion (Bartsch); bright scarlet (Ives).

Range.—From North Carolina to Gulf of Mexico and Yucatan (Ives); West Indies and Caribbean Sea. Low water to 28 fathoms.

Material examined.—See table, pages 470–471.

MACROCOELOMA TRISPINOSUM NODIPES (Desbonne)

Plate 166, fig. 2; plate 168, fig. 2

Pericera nodipes DESBONNE, in Desbonne and Schramm, Crust. de la Guadeloupe, 1867, p. 15, pl. 5, fig. 13 (type-locality, Guadeloupe; type perhaps not extant).

Macrocoeloma trispinosum VERRILL, Trans. Connecticut Acad. Arts and Sci., vol. 13, 1908, p. 414, text-fig. 44.

Diagnosis.—Postero-lateral projections very broad laminae, margins continuous with those of carapace. Four dorsal bosses smoothly rounded.

Description.—Differs as follows from typical *trispinosum:* The shape of the carapace is different because the carapace is very little, if at all, constricted behind the orbits; the projections at the postero-lateral angles are scarcely spines, but broad, obtuse, laminate lobes whose margins are almost continuous with those of the carapace proper; the posterior median spine is short and blunt. The emargination in the upper border of the orbit is slight, the preocular tooth acute, not prominent, the postocular tooth blunt or subacute. The four bosses in the middle of the carapace are smoothly rounded.

Measurements.—Male (15137), extreme length of carapace 52, extreme width of same 49.4 mm.

Color.—Yellowish (Desbonne). When cleaned, reddish brown (Verrill).

Range.—North Carolina; Florida Keys; Gulf of Mexico; West Indies; Fernando Noronha Island, Brazil; Bermudas. Shore to 26 fathoms.

Material examined.—See table, pages 471-472.

MACROCOELOMA CAMPTOCERUM (Stimpson)

Plate 174, fig. 4; plate 270, fig. 2

Pericera camptocera Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 112 (type-locality, near Key West in from 2 to 5 fathoms; type not extant).—A. Milne Edwards, Crust. Rég. Mex., 1873, p. 57.

Macrocoeloma camptocera Miers, *Challenger* Rept., Zoöl., vol. 17, 1886, pp. 79 and 80.—Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 249, pl. 33, fig. 2.

Macrocoeloma camptocerum Rathbun, Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 257.

Diagnosis.—Rostral horns divergent from base. Postero-lateral spines slender. Four dorsal spines present.

Description.—Surface covered with a short, close pubescence, and in addition, longer curved hairs are present on the front, gastric region, and lateral portions of branchial regions. Postero-lateral spines subconical, regularly tapering, acute, and directed slightly backward. Posterior median spine shorter, acute, obliquely erect. Four slender, erect, dorsal spines forming a cross, one gastric, one cardiac, two branchial. Rostral horns rather regularly divergent from their base, acute. The antennae may overreach the horns; the antennal spines, right and left, are very divergent from each other. The orbital tubes are laterally very protuberant as are also the little anterior and posterior spines, the former curving forward a little.

Chelipeds of male strong, longer than carapace; the arms have a few short spinules above, the wrists are a little nodulous and have a tubercle at the inner angle; the palm is widest near the articulations, the fingers are tipped with black or dark brown. Legs slender, nearly smooth.

Material examined of Macrocoeloma trispinosum, variety

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°C						
North Carolina: Off Cape Fear.	33 42 45	77 31 00	17	S. P		Oct. 20, 1885	2616	*Albatross*	1 ♀	16178	
Bahamas: Green Turtle Cay.								E. A. Andrews	2 ♀	20704	
Florida:											
Miami			10–40 Feet					J. B. Henderson	1 ♂	49085	
Off Biscayne Bay			16–34					Paul Bartsch	1 ovig. ♀	45627	
North of Knights Key Channel.	6 miles N. NE. ½ E. of East Bahia Honda Key.		11	barry		Jan. 22, 1903	7414	*Fish Hawk*	1 ♂	46931	
Key West, on rocks			Low tide					Henry Hemphill.	1 ♂ 1 ♀	9279	
Eastern Dry Rocks						1884		Edward Palmer	1 ♂	9280	
Gulf of Mexico, off Northwest Channel.	24 42 30	81 55 52	7.25	Co	20	Feb. 24, 1902	7293	*Fish Hawk*	1 y	46955	
Dry Tortugas								Edward Palmer	3 ♂ 1 y	14001	
Do			4					J. B. Henderson	1 y	46956	
Florida Reef									1 sm. ♂	1918, M. C. Z.	From Lyceum of Natural History, New York.
Off Cape Sable	25 03 50	81 20 30	3.25	gy. S. Sh		Dec. 18, 1902	7364	*Fish Hawk*	1 ovig. ♀	46925	With sponge.
West of Marco	26 00 00	82 57 30	24	fne. S. bk. Sp. brk. Sh.		Mar. 19, 1885	2413	*Albatross*	2 ♂ 2 ♀	15136	
Off Boca Grande	Boca Grande Light, NE. ½ N., 15½ miles, to NE. ¾ N., 12 miles		12.5	hrd. smooth	°F 68.5	Jan. 2, 1913	10	*Fish Hawk*	1 y	55841	
Off Charlotte Harbor	26 33 00	83 10 00	28	sdy	°C 19.1	Apr. 2, 1901	7123	do	1 ♂ 1 ♀	25594	
Anclote Section	28 08 30	83 10 00	10	rky. Co	13.5	Jan. 23, 1902	7231	do	1 ♂	46921	With sponge and worm tube.
St. Martins section	28 26 30	83 08 00	10	sdy. grsy	13.6	Jan. 15, 1902	7216	do	1 ♂	46919	
Cuba: Cabanas				S. Sh. Grs. M		June 8–9, 1914		Henderson and Bartsch, *Tomas Barrera* Exped.	1 ♀	48660	

Jamaica:											
Montego Bay			Piles of wharf			July 5, 1910		E. A. Andrews	1♂	43014	
Eight miles east of Montego Bay.			On coral reef			July 20, 1910		C. B. Wilson	1♂ 1♀	43015	
Kingston Harbor								T. H. Morgan	1♂ 1♀	17202	
Porto Rico:											
Mayaguez Harbor						Jan. 20, 1899		*Fish Hawk*	1♂	24218	
Off Culebra Island	Pt. Mula Lighthouse, SW., ¼ S., 10½ miles		15.25	Co. S	25	Feb. 8, 1899	6087	do	1 y	24215	
St. Thomas:											
St. Thomas						1884		*Albatross*	1♂ 4♀	16180	
Off St. Thomas	Sail Rock, W. by N. ½ N., 6 miles.		20–23	Co	25.8	Feb. 6, 1899	6079	*Fish Hawk*	1 y	24216	
Gregerie Channel, between Water Island and St. Thomas.			5–2.75			July 7, 1915	7	C. R. Shoemaker	2♀	50953	From Carnegie Institution.
Curaçao: Spanish Water						Apr. 3, 1920		C. J. van der Horst.	1♂	Amsterdam Mus.	

Material examined of Macrocoeloma trispinosum nodipes

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°F						
North Carolina: Off Cape Fear.	33 37 15	77 35 30	17	crs. yl. S. brk. Sh.		Oct. 20, 1885	2618	*Albatross*	1 y	16179	
Florida:											
Cape Florida								G. Wurdemann	2 ovig. ♀	1917, M. C. Z.	
Dry Tortugas								J. E. Mills	1♂ 1 ovig. ♀	647, M. C. Z.	Covered with sponge and worm tubes.
Off Cape Sable	East end of Sawyer Key, S. ¼ W., 2¼ miles.		4.75	rky		Dec. 22, 1902	7390	*Fish Hawk*	1♂ 1♀	46930	
Do	24 58 05	81 28 30	5	rky		Dec. 19, 1902	7375	do	1♀	46929	With sponge.
Do	25 00 30	81 12 20	2	rky		do	7369	do	1♀	46926	
Do	25 00 40	81 15 37	2.5	rky		do	7370	do	1♂	46927	Do.
Do	25 00 55	81 22 15	4	rky		do	7372	do	1♂ 1 ovig. ♀	46928	Do.
Do	25 06 30	81 12 25	2	rky		Dec. 18, 1902	7356	do	1♂	46923	
Do	25 07 10	81 29 00	5	rky. Co		do	7361	do	2♂ 1♀	46924	With sponge and ascidians.
Do	25 09 45	81 18 35	3.25	rky. Co		Dec. 17, 1902	7351	do	3♂ 3♀ 1 ovig.	46922	

Material examined of Macrocoeloma trispinosum nodipes—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
Florida—Continued.	° ′ ″	° ′ ″			°*F*						
Off Sanibel Island	Bell buoy off Sanibel Id. Light, N. E., 10–2½ miles.		4.75—7	Sh.	67	Jan. 1, 1913	9	*Fish Hawk*	1 ♀	50979	
Northwest of Charlotte Harbor.	27 04 00	83 21 15	26	crs. gy. S. brk. Sh.	°*C*	Mar. 18, 1885	2409	*Albatross*	1 y. ♂	16055	
Highland section	27 55 30	83 11 30	13	Co. R.	15.2	Jan. 28, 1902	7253	*Fish Hawk*	1 y.	46954	
St. Martins section	28 31 45	83 08 00	5.75	Co. R. Grs.	12.5	Jan. 15, 1902	7221	do	2 y.	46953	
Do.	28 41 00	83 15 15	8.5	rky	13.5	Jan. 17, 1902	7226	do	1 ♂	46920	With sponge.
North Key section	28 47 55	83 16 30	8	rky. grsy	17	Dec. 9, 1901	7211	do	1 ♀	46918	
Do.	28 52 45	83 07 00	5.75	rky	16.1	do	7209	do	1 ♂	46917	With sponges.
Do.	28 55 30	83 02 00	4	rky	15.3	do	7208	do	2 ♀	46916	Do.
Cedar Keys						Feb., 1887		Lieut. J. F. Moser, U. S. N., U. S. C. S. S. *Bache.*	1 ♂	15137	
Deadmans Bay section	29 39 30	83 53 10	7.5	S. Co.	21.5	Nov. 7, 1901	7152	*Fish Hawk*	1 ♀	46914	
Aucilla section	29 44 09	84 06 30	7	R. Co.	16.5	Dec. 5, 1901	7193	do	1 ♂	46915	With sponge.
Cuba: Reef Lavesos Italienos, opposite Cayo Lavesos.						June 2, 1914	14	Henderson and Bartsch, *Tomas Barrera* Exped.	1 ovig. ♀	48678	
PortoRico: Ensenada Honda, Culebra Island.						Feb. 9, 1899		*Fish Hawk*	1 y.	24217	
Antigua: English Harbor			Shore.			1918		Barbados-Antigua Exped. Univ. Iowa.	1 ♂ 1 y.	Mus. S. U. I.	
Brazil: Fernando Noronha Island.						1876–1877		R. Rathbun, Hartt Explor.	1 ♀	19961	

Measurements.—Male (46912), total length of carapace (to tips of spines) 40, length from sinus between rostral horns to margin of carapace 29.5, total width 36, width measured from anterior base of postero-lateral spines 22.5 mm.

Variations.—The rostral horns may be straight or slightly curved (convex to each other); in length they range from one-sixth (15139) to one-third (male, 46899) or more of the total length of the carapace. The interspace varies from rather a narrow V (male, 46899) to almost a right angle (46912). The postero-lateral spines may be straight or curved (concave) upward (46901, 46884); and nearly transverse (46912) or occasionally directed strongly backward (46887).

Range.—North Carolina; south and west Florida. 2 to 12½ fathoms.

Material examined.—See table, pages 474–476.

MACROCOELOMA HEPTACANTHUM (Bell)

Plate 173, fig. 1; plate 269, figs. 8–11

Pericera heptacantha Bell, Proc. Zool. Soc. London, vol. 3, 1835 (1836), p. 173 (type-locality, Puerto Portrero; type not extant); Trans. Zool. Soc. London, vol. 2, 1836, p. 61, pl. 12, figs. 6 (colored), 6*r*–6*u* (Puerto Portrero, Central America, on sand, 13 fathoms).

Macrocoeloma heptacantha Miers, *Challenger* Rept., Zool., vol. 17, 1886, pp. 79 and 81.—Rathbun, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 576.

Diagnosis.—Seven large spines on posterior half of carapace. Front strongly deflexed; horns short. Basal antennal spine not visible in dorsal view.

Description.—Carapace suboblong, being proportionally wider just behind the orbits and narrower across the postero-lateral angles than in *M. camptocerum.* The seven spines of the hinder half are not very unequal, and five of them form a nearly transverse line across the carapace; they are the two pairs of branchial spines and the cardiac spine. Of the three median spines the gastric and the cardiac are erect, the intestinal spine is curved and directed upward and a little backward. The inner branchial spine points upward, outward and backward; the postero-lateral spine points slightly backward in a horizontal plane.

From the gastric spine the anterior half of the carapace including the rostrum slopes steeply downward; horns short, acute and widely divergent. This is the case in the specimens examined. In Bell's figure of the adult the horns although widely separated are less oblique, the interspace being more U-shaped. The orbits are turned outward and a little forward; the upper and lower margins are deeply incised, the anterior and posterior teeth are acute. In Bell's figure[56] there is a good-sized marginal, hepatic spine; he does not mention

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[56] Trans. Zool. Soc. London, vol. 2, 1836 ,pl. 12, fig. 6.

Material examined of Macrocoeloma camptocerum

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
North Carolina:	° ′ ″	° ′ ″			°C						
Beaufort Harbor			3.5			Sept. 6, 1913	7942?	*Fish Hawk*	1 y. ♀	51023	
Fishing ground, off Beaufort.	Course NW. by W., toward buoy.		15	rough		Aug. 11, 1914	8211	do	1 ovig. ♀	51028	
Florida:			*Feet*								
Biscayne Bay	1 mile N. of Feather Bed Bank.		11	S. Grs.		Mar. 7, 1903	7481	do	1♀	46911	With Rhizocephalid parasite.
Card Sound	1½ miles N. of Pumpkin Key.		10	barry		Mar. 10, 1903	7493	do	1♂ 2 ovig. ♀ 1 y.	46912	
Hawk Channel	1¾ miles S. ¾ E. of Pigeon Key.		*Fathoms* 3	S. Grs.	23.5	Jan. 27, 1903	7426	do	1♀	46905	
Do	3⅛ miles N. ¾ E. of Sombrero Light.		*Feet* 11.5	rky		do	7427	do	1 ovig. ♀	46906	
Do	1 mile N.NW. ½ W. of East Washerwoman Key.		16	rky		do	7428	do	1 ovig. ♀	46907	Covered with sponge.
Do	½ mile SE. by S. of SE. end of Duck Key.		14	rky		do	7429	do	4♀ (1 ovig.)	46908	
Do	1¼ miles S. by W. of SE. point of Long Key.		*Fathoms* 2.5	barry		Feb. 18, 1903	7463	do	1♂ 1♀	46909	
Do	1⅛ miles E. by S. of W. end of Lower Metacumbe.		3	barry		do	7464	do	1 y. ♂	46951	
Do	1½ miles E. of Tea Table Key.		2.5	barry		Feb. 19, 1903	7466	do	1 y.	46952	
Do	¼ mile SW. by S. of Basin Hill Beacon.		2	S. Grs.		do	7469	do	1♂ 2♀ (1♀ soft shell, 1♀ ovig.)	46910	With sponges.
Pigeon Key Lake	1½ miles NW. of Knights Key.		*Feet* 10.5	rky		Jan. 7, 1903	7409	do	1♂ 1♀	46903	
North of Knights Key Channel.	3 miles NE. by N. of East Bahia Honda Key.		11	rky		Jan. 22, 1903	7412	do	1♀	46904	
Do	2 miles NE. by E. of Basin Bank.		8.5	rky		do	7417	do	1♂	46950	
Indian Key			(1)	R				H. Hemphill	1♀	15140	

Gulf of Mexico, off Northwest Channel.	24 44 50	81 55 50	10.25	hrd. smooth	19	Feb. 24, 1902	7292	*Fish Hawk*	1 ovig. ♀	46890	
Do	24 42 30	81 55 52	7.25	Co	20	do	7293	do	1 y	46949	
Do	24 38 40	81 56 28	5.25	Co	19.5	do	7295	do	1♂	46891	
Key West						1885		*Albatross*	1♂	15141	
Off Key West, inside the reef.	Key West Light to East Channel Bar Buoy, 71° 53′; to Beacon "A," 74° 46′.		5.25	co. S. Grs	20	Feb. 13, 1902	7278	*Fish Hawk*	1♀	46889	
Off Cape Sable	25 09 45	81 18 35	3.25	rky. Co		Dec. 17, 1902	7351	do	2♀	46892	
Do	25 09 52	81 21 53	3.75	gy. S. Sh		do	7352	do	1♂ 1 y. ♀	46893	♂ encrusted with bryozoans and hydroids.
Do	25 06 30	81 12 25	2	rky		Dec. 18, 1902	7356	do	1♂ 1♀	46894	The female has male abdominal appendages and a young Rhizocephalid parasite.
Do	25 07 05	81 25 50	4.5	gy. S		do	7360	do	1♂	46895	
Do	25 07 10	81 29 00	5	rky. Co		do	7361	do	1 y. ♀	46896	
Do	25 00 30	81 12 20	2	rky		Dec. 19, 1902	7369	do	1 y. ♀	46897	With ascidian attached.
Do	25 00 40	81 15 37	2.5	rky		do	7370	do	3♀ 2 y	46898	The largest bears sponges.
Do	25 00 55	81 22 15	4	rky		do	7372	do	1♂ 1♀	46899	With ascidian.
Do	25 01 00	81 25 30	4.5	speckled S. Sh		do	7373	do	1♂	46900	With sponge.
Do	24 58 05	81 28 30	5	rky		do	7375	do	2♂ 1♀	46901	
Do	E. end of Sawyer Key, bearing S. ¼ W., 2¼ miles.		4.75	rky		Dec. 22, 1902	7390	do	1♂ 2♀	46902	
Do								Lieut. J. F. Moser, U. S. Navy, U. S. C. S. S. *Bache*.	1♂	13757	
Marco						1885		H. Hemphill	2♀	15139	
Highland section	27 49 30	83 02 45	7.75	S	15	Jan. 28, 1902	7256	*Fish Hawk*	1♀	46888	
Anclote section	Anclote Light bearing E. ⅞ N., 21½ miles.		12.5	R. Co. S	17.2	Mar. 28, 1901	7106	do	1 y	25595	
Do	28 19 30	83 01 00	6.25	rky. Grs	12.5	Jan. 24, 1902	7239	do	1♂	46887	
Do	28 13 30	83 04 30	6.75	S. brk. Sh	13	do	7244	do	1 y	46948	
St. Martins section	28 27 15	83 19 00	10.5	rky. sdy	14	Jan. 15, 1902	7218	do	1♀	46885	The posterior and the left of the four dorsal spines are absent.
Do	28 33 30	83 19 00	9	sdy. grsy	13.6	do	7219	do	1♂	46886	
Do	28 42 30	83 09 45	7	S. brk. Sh. Grs.	12.2	Jan. 17, 1902	7225	do	1 y	46947	

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[1] Near low tide.

Material examined of Macrocoeloma camptocerum—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″	*Feet*		°*C*						
Florida—Continued.											
Off St. Martins Reef	28 43 00	82 56 00	17			1887		Lieut. J. F. Moser, U. S. Navy, U. S. C. S. S. *Bache.*	1♂ 1 ovig. ♀	13055	
Off northwest end St. Martins Reef.	Near 28 50 00	Near 83 00 00				1887		do	1♀ 2 y	13043	
Off Florida Banks	28 56 00	82 55 00	19			Apr. 3, 1887		do	2♀	13061	
			Fathoms								
North Key section	28 57 30	82 58 00	3	rky	15.5	Dec. 9, 1901	7207	*Fish Hawk*	2♂ 2♀	46883	
Do	28 47 55	83 16 30	8	rky. grsy	17	do	7211	do	1♂	46884	
Cedar Keys						Feb., 1887		Lieut. J. F. Moser, U. S. Navy, U. S. C. S. S. *Bache.*	2♂ 2♀	15138	
Pepperfish Key section	29 21 00	83 32 00	6.75	rky	16.7	Nov. 21, 1901	7160	*Fish Hawk*	1 y. ♂	46945	
Do	29 18 00	83 37 00	8	rky	18	do	7161	do	1♀	46880	
Do	29 13 15	83 32 30	7.25	rky	17.2	do	7165	do	1♂	46881	
Deadman's Bay section	29 32 30	83 50 00	19	R. Co	16.6	Dec. 6, 1901	7201	do	1 y. ♂	46946	Soft shell.
Aucilla section	29 34 00	84 07 20	10.5	R. Co	17.6	Dec. 5, 1901	7195	do	1♀	46882	

this spine, nor is it existing on the two specimens, both young, which I have examined. There is, however, a subhepatic spine, not visible in dorsal view, which is directed downward and a little outward.

On the basal antennal segment there is a slender-pointed spine outside the insertion of the next segment. This spine is not visible from above, on account of the inclination of the front. On the ventral surface of the carapace, just outside the postero-external angle of the basal segment there is a small spine and behind it a spine at the angle of the buccal cavity. These three spines are in the same longitudinal line.

The arm of the cheliped has a slender spine at either end of the outer margin; the wrist is rough with small, low tubercles.

Color.—Light brown covered with darker hair; first pair of feet reddish (Bell).

Measurements.—Length, 1 inch 5 lines (38 mm.), width, including the lateral spines, 1 inch 7 lines

(43 mm.) (Bell). Young female (21933), total length 10.6, total width of carapace 10.6 mm.

Range.—From Cape St. Lucas, Lower California, Mexico, to Panama Bay. 13 to 31 fathoms.

Material examined.—

Off Cape St. Lucas; lat. 22° 52′ 00″ N.; long. 109° 55′ 00″ W.; 31 fathoms; rky.; temp. 74.1° F.; May 1, 1888; station 2829, *Albatross;* 1 young female (21933).

Panama Bay; lat. 8° 10′ 30″ N.; long. 78° 50′ 30″ W.; 18 fathoms; gy. S. brk. Sh.; Mar. 5, 1888; station 2798, *Albatross;* 1 young female (21932).

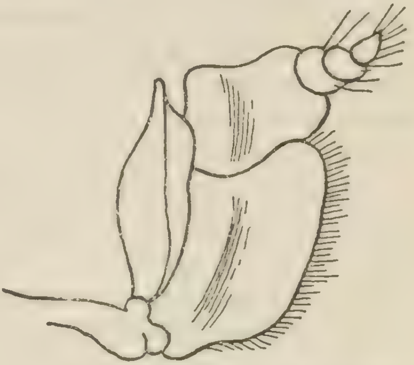

FIG. 133.—MACROCOELOMA HEPTACANTHUM, MAXILLIPED (AFTER BELL)

MACROCOELOMA SEPTEMSPINOSUM
(Stimpson)

Plate 173, figs. 2 and 3

Pericera septemspinosa STIMPSON, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 113 (type-locality, west of Tortugas, 36 fathoms; type not extant).—A. MILNE EDWARDS, Crust. Rég. Mex., 1873, pp. 59 and 200, pl. 15 A, figs. 2–2*c*.—Perhaps *Pericera septemspinosa* GUNDLACH and TORRALBAS, An. Acad. Habana, vol. 36, 1899 (1900), p. 366, text-fig.; reprint, 1917, p. 21, pl. [5], fig. 13.

Macrocoeloma septemspinosa MIERS, *Challenger* Rept., Zool., vol. 17, 1886, pp. 79 and 80.

Diagnosis.—Seven sharp spines on posterior half of carapace. A prominent subhepatic spine. Preocular spine erect. Rostral horns divergent.

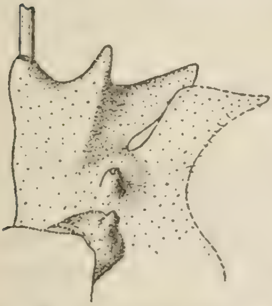

FIG. 134.—MACROCOELOMA HEPTACANTHUM, FEMALE (21932), BASAL ANTENNAL ARTICLE, WITH POSTORBITAL LOBE. × 12

Description.—Carapace oblong-triangular, strongly convex, pubescent and hairy; antero-lateral and postero-lateral sides concave. Dorsal surface armed with seven prominent spines, one on the gastric, one on the cardiac, one on the intestinal, and two on each branchial region in line with the cardiac spine; spine at lateral angle transverse. Rostrum about one-fifth as long as the entire carapace, deflexed; horns subtriangular, curved, acute, divergent, pointing obliquely outward. Orbits projecting obliquely forward, outward and upward, with a prominent, acute, preocular and postocular spine, the former suberect, and much more elevated than the postocular spine. Suborbital, subhepatic and antennal regions armed with six spines of which the four anterior are small, the two posterior large; of the small spines one is situated at the insertion of the movable part of the antenna, and three (two antennal and one orbital), form a longitudinal row; one of the large spines is near the outer angle of the buccal cavity, the other further back and out.

Chelipeds of adult male rather slender, about as long as carapace. Arm with two conical spines above, one terminal, one near proximal end, also a line of three or four tubercles beneath, and two tubercles on the outer surface. Proximal half of fingers gaping, a large tooth at base of dactyl. Merus of ambulatory legs with a conical tooth above at articulation with carpus.

Measurements.—Male (15128), length of carapace measured to posterior margin 21.5, length of horn 4, width of carapace between tips of lateral spines 26.6, width just in front of these spines 17.3 mm. Female (15131), length of carapace 24, greatest width 27.7 mm. Female (Miers), length 41, width 32.5 mm.

Range.—South Carolina to Gulf of Mexico; Bahia, Brazil (Miers). Shallow water to 79, exceptionally 116, fathoms.

Material examined.—See table, page 479.

MACROCOELOMA DIPLACANTHUM (Stimpson)

Plate 169, fig. 1; plate 269, figs. 1–3

Pericera diplacantha STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 183 (type-locality, St. Thomas; type not extant).—SCHRAMM, in Desbonne and Schramm, Crust. Guadeloupe, 1867, p. 16, pl. 5, figs. 16–18.—A. MILNE EDWARDS, Crust. Rég. Mex., 1873, p. 55, pl. 13, fig. 2.

Macrocoeloma diplacantha MIERS, *Challenger* Rept., Zool., vol. 17, 1886, p. 79.

Macrocoeloma diplacanthum RATHBUN, Bull. U. S. Fish Comm., vol. 20 for 1900, pt. 2 (1901), p. 74.

Diagnosis.—Postero-lateral process bifid. Rostral horns subparallel. Five conical, dorsal tubercles.

Description.—Surface ornamented with rows of long, curved hairs, one row leading from each branchial region forward along the upper surface of the rostrum, another row along the sides of the carapace. Carapace narrow, subtrigonal, much elevated. Four conical tubercles form almost a rectangle near the center of the carapace, while a fifth, more spiniform elevation occupies the intestinal region. Postero-lateral process rather long, flattened and double, seeming to consist of two spines, one above the other, connected nearly to their tips by a web-like connecting lamina, concave anteriorly, convex posteriorly. Antero-lateral margin concave, unarmed except with a small hepatic tubercle. Gastric region strongly inclined anteriorly, with the frontal region (Stimpson). The rostrum is long, varying from nearly one-third to two-fifths of the entire length of the carapace; horns

Material examined of Macrocoeloma septemspinosum

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.
	Latitude N.	Longitude W.								
	° ′ ″	° ′ ″			°F					
South Carolina: East of Cape Romain.	32 55 00	77 54 00	79	crs. S. bk. Sp.	59.1	Jan. 5, 1885	2311	*Albatross*	1♂ 1♀	15127.
Bahamas: Bahama Banks						May 18, 1893		State Univ. Iowa Exped.	1♀	Mus. S. U. I.
Florida:										
Off Key West	24 25 45	81 46 00	45	Co.	75	Jan. 15, 1885	2318	*Albatross*	1♂ 1♀	15129.
Do.	24 25 45	81 46 45	45	Co.	75	do.	2317	do.	1♂ 1♀	15128.
Do.	Sand Key Light bearing W. NW., Key West Light bearing N.		60			June 19, 1893	24	State Univ. Iowa Exped.	4♂ 3♀	Mus. S. U. I.
Do.	Sand Key Light bearing NW. by N., Key West Light, N. ½ E.		50-60			do.	27	do.	2 y.	Mus. S. U. I.
Off Sand Key	Sand Key Light bearing N., about 6 miles.		116			do.	28	do.	1♂	Mus. S. U. I.
South of Dog Island	28 47 30	84 37 00	24	Co. brk. Sh.		Mar. 15, 1885	2407	*Albatross*	1♂	15135.
South of St. George Island	28 46 00	84 49 00	26	crs. S. Co.		do.	2406	do.	3♀	15134.
South of Cape St. George	28 45 00	85 02 00	30	gy. S. brk. Co.		do.	2405	do.	3♀	15133.
Southwest of Cape San Blas.	29 14 00	85 29 15	25	Co.		Feb. 7, 1885	2373	do.	1♀	15132.
Do.	29 15 30	85 29 30	27	G.		do.	2372	do.	2♀	15131.
Do.	29 18 15	85 32 00	25	crs. gy. S. brk. Sh.		do.	2370	do.	1♂ 1♀	15130.

long, slender, acute, slightly divergent, and connected at base by a thin lamina. Anterior spine of basal antennal joint minute. Orbital tubes moderately protuberant, their anterior and posterior angles rounded.

Measurements.—Male (43012), length of carapace 21, length of horn 8, width of carapace between tips of postero-lateral spines 12.8 mm. Female (9365), length of carapace 28, length of horn 9, width of carapace between tips of postero-lateral spines 23.2 mm. Male (Schramm), length of carapace 36, width 29 mm.

Range.—Key West, Florida; Bahamas; West Indies and Caribbean Sea. Shallow water.

Material examined.—

Key West, Florida; 1885; H. Hemphill; 1 female (9365).

Off Little Cat Island, Bahamas, on the submerged bank connecting it with Eleuthera; 3 to 13 fathoms; 1893; station 68, State Univ. Iowa Exped.; 1 male (Mus. S. U. I.).

Reef Lavesos Italienos, opposite Cayo Lavesos, Cuba; June 2, 1914; Henderson and Bartsch, *Tomas Barrera* Exped.; 1 female (48677), with Rhizocephalid parasite.

Montego Bay, Jamaica; 1910; E. A. Andrews: Dredged off Montego Bay Point; June 25; 1 female, with Rhizocephalid parasite (43013); June 28; 1 male (43024). Bathing beach; July 19; 1 male (43012).

Port Antonio, Jamaica; specimens identified for the Institute of Jamaica, Kingston.

Porto Rico; 1899; U. S. Fish Commission: February 1; Playa de Ponce Reef; 1 young (24115). February 9; Ensenada Honda, Culebra; 2 females (24093). February 11; Culebra; 1 male (24119).

St. Croix; specimens in Copenhagen Mus.

St. Thomas; 1884; *Albatross;* 1 male (16182).

Guadeloupe; Saussure; specimens in Geneva Mus.

Curaçao: Caracas Bay; encrusted with algae; April 19, 1920; C. J. van der Horst; 1 male (Mus. Amsterdam).

Old Providence, Caribbean Sea; 1884; *Albatross;* 1 young (9136).

MACROCOELOMA SUBPARALLELUM (Stimpson)

Plate 172

Pericera subparallela Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 182 (type-locality, St. Thomas; cotypes, Cat. Nos. 1227 and 1243, M. C. Z.).—A. Milne Edwards, Crust. Rég. Mex., 1873, p. 54, pl. 13, fig. 3.

Pericera vilpini Desbonne and Schramm, Crust. de la Guadeloupe, 1867, p. 12, pl. 5, figs. 14 and 15 (type-locality, *les côtes rocheuses de la Guadeloupe; trouvé au Moule;* type perhaps not extant).

Macrocoeloma subparallela Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 79.

Macrocoeloma subparallelum RATHBUN, Bull. U. S. Fish Comm., vol. 20 for 1900, pt. 2 (1901), p. 74.

Diagnosis.—A row of seven short spines or sharp tubercles on the dorsum between the postero-lateral angles. Posterior part of carapace eroded. Rostral horns subparallel.

Description.—Carapace broad, triangular, covered with a short, vesicular pubescence. A band of curved hairs extends from tip of rostrum to middle of branchial region; a similar band on antero-lateral margin. A sharp tubercle on mesogastric region. Posterior third of carapace finely eroded. Protuberances at lateral angles triangular, flat, acute; between them a row of five protuberances, of which the submedian pair is small, and the median one is high and occupies the cardiac region; a smaller median spine or tubercle on the intestinal region. Rostrum about one-fourth as long as entire length of carapace, the horns connected behind by a thin expansion of the front, subparallel or sometimes divergent, and widely separated by a more or less U-shaped sinus; this sinus is devoid of crispate setae. Orbital tubes directed obliquely outward and forward, the preocular spine acute, stouter but less advanced than the spine at the antero-internal angle of the basal antennal segment. The antennal spine is visible in dorsal view, but the peduncle is hidden by the rostral horns.

Chelipeds very strong in the adult male and as long as carapace; two rows of tubercles on outer surface of arm and wrist, one row on palm; palms broad, compressed; fingers stout, unevenly gaping except at the dark brown, crenulated tips; dactylus with a shallow subbasal tooth.

Abdomen and sternum of both sexes sculptured.

Color.—Brownish-yellow (Desbonne).

Measurements.—Male (48666), length of carapace 34.3, length of horn 8.1, width of carapace between tips of postero-lateral laminae 29.5 mm. Male (Schramm), length of carapace 41, width between tips of postero-lateral laminae 36. Female (24200), length of carapace 31, length of horn 6.3, width of carapace 27.8 mm.

Range.—West Indies; Caribbean Sea.

Material examined.—

Cuba; 1914; Henderson and Bartsch, *Tomas Barrera* Expedition: Between Cape San Antonio and Cape Cajon; 2 to 12 fathoms; on bottom varying from pure sand to weedy; May 24; station 12; 1 young (48741). Cabañas; June 8–9; station 16; 1 male (48666); caught by copper sulphating on reef.

Jamaica; specimens in Institute of Jamaica.

Haiti; Dr. Weinland; 1 female (323, M. C. Z.).

Porto Rico; 1899; *Fish Hawk:* Guanica Bay, on coral reef; January 28; 1 male (24139). Playa de Ponce Reef; Feb. 1; 1 male (24140). Ponce; 1 male (24141). Fajardo; Feb. 17; 2 males, 1 female (24200).

St. Thomas: 1884; *Albatross;* 1 female (16183). A. H. Riise; 1 immature female, cotype (1227, M. C. Z.), 1 male, cotype (1243, M. C. Z.); received from Smithsonian Institution.

Guadeloupe; Saussure; specimens in Geneva Mus.

Barbados; 1918; Barbados-Antigua Expedition, University of Iowa: 1 female (Mus. S. U. I.). Bathsheba; 1 ovigerous female (Mus. S. U. I.). Pelican Island; tide pools; May 11; 1 immature female (Mus. S. U. I.). Shallow water, under large anemone; 1 ovigerous female (Mus. S. U. I.).

Old Providence Island, Caribbean Sea; 1884; *Albatross;* 1 female (16184).

MACROCOELOMA VILLOSUM (Bell)

Plate 269, figs. 4–7

Pericera villosa Bell, Proc. Zool. Soc. London, vol. 3, 1835 (1836), p. 173 (type-locality, Gulf of Guayaquil; type not extant); Trans. Zool. Soc. London, vol. 2, 1836, p. 59, pl. 12, figs. 4, 4 *k-n*.—Nobili, Boll. Mus. Zool. Anat. Comp. R. Univ. Torino, vol. 16, No. 415, 1901, p. 30.

Pericera fossata Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 181 (type-locality, Cape St. Lucas; type not extant).

Macrocoeloma villosa Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 79.

Macrocoeloma villosum Rathbun, Proc. U. S. Nat. Mus., vol. 38, 1910, pp. 574 and 616.

Diagnosis.—Postero-lateral spines directed forward. Protuberances of carapace deeply separated. Rostral horns very divergent.

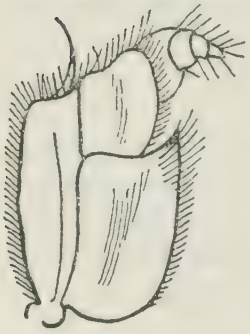

Fig. 135.—Macrocoeloma villosum, Guayaquil, maxilliped. (After Bell)

Description (after Bell and Stimpson).—Surface everywhere covered with a uniform short, dense, closely adhering pubescence. A few curled setae on the rostrum, and on the concave antero-lateral slopes of the carapace. Lateral processes long, blunt, and a little curved forward. The regions of the carapace are protuberant and separated by very deep sinuous pits or channels, appearing somewhat as if eaten out; but the protuberances themselves are not vermiculated. Rostrum as long as distance between eyes; the horns diverge, the distance between their tips equaling about two-thirds or three-fourths that between the orbits.

Spine of basal segment of antennae slender, reaching considerably beyond the preorbital tooth.

The abdomen of the female has a deep, vermiculated furrow on each side of the median rounded ridge; also channeled sutures.

Color.—Male, brown red, red predominating on outer surface; female, darker brown, without any admixture of red (Bell). Female, dark buff, inclining to brownish (Stimpson).

Measurements.—Length, 1 inch 7 lines (43.18 mm.), width the same, including the lateral spines each of which measures 3 lines (7.62 mm.) (Bell). Female, length 1.32 inch (33.53 mm.), width 1.2 inch (30.48 mm.) (Stimpson). Male, entire length of carapace 45.5, width 46 mm.; female, length 35, width 36.5 mm. (Nobili).

Range.—Cape St. Lucas, Lower California, to Ecuador.

Localities recorded.—

Cape St. Lucas, Lower California (Stimpson). Bay of Santa Elena, Ecuador (Nobili). Bay of Guayaquil, Ecuador; 11 fathoms, on sandy mud (Bell).

MACROCOELOMA LAEVIGATUM (Stimpson)

Plate 169, figs. 2 and 3

Pericera laevigata STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 181 (type-locality, St. Thomas; type not extant).—A. MILNE EDWARDS, Crust. Rég. Mex., 1873, p. 56; 1875, pl. 15, figs. 1–1*e*.

Pericera curvicorna DESBONNE, in Desbonne and Schramm, Crust. de la Guadeloupe, 1867, p. 14, pl. 5, fig. 19 (type-locality, Moule, Guadeloupe; cotype in Paris Mus.).

Macrocoeloma lævigata MIERS, *Challenger* Rept., Zool., vol. 17 1886, p. 80.

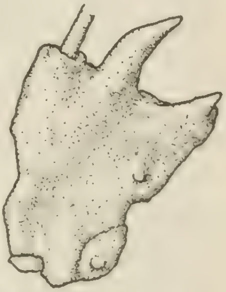

FIG. 136.—MACROCOELOMA LAEVIGATUM, MALE (46933), BASAL ANTENNAL ARTICLE- × 6.66

Diagnosis.—Branchial width not much greater than orbital. No large spines on posterior half of carapace. A long, curved, antennal spine visible from above.

Description.—Carapace ovate-oblong, convex. Surface covered with a short pubescence and partly with long, curled hairs. Back and sides rounded. Spines and tubercles small and few; a small spine at the summit of the low, cardiac cone; a stouter spine on the intestinal region; a spine on each branchial region a little above the postero-lateral margin but not at the widest part of the carapace; a large, blunt tubercle near the hepatic border of each gastric region; a small branchial tubercle either side of the cardiac region and behind its middle. Orbital tubes large, nearly transverse, the preocular and postocular teeth subequal, the latter more produced. Rostrum between a fourth and a fifth of the length of the carapace, deflexed, curving downward (concave below); horns occupying about two-thirds of the length, regularly tapering, acute, divergent. Movable part of antennae longer than rostrum; spine of basal article large, prominent, exposed from above, divergent from the rostrum and much nearer the orbital tubes; a short, acute spine is situated at the antero-external angle and overlaps the preocular spine; further back a small blunt spine. On the lower surface of the carapace an acute spine just outside the basal segment of the antenna, and a row of three tubercles on the pterygostomian region.

The merus of the chelipeds has a row of conical spines above and a row of tubercles on the outer surface and the lower, outer margin. Carpus tuberculate, manus smooth, digits gaping in their basal third or two-fifths.

Color.—Yellowish (Desbonne); hands crimson, distal half of fingers black except the tips which are white (Stimpson).

Measurement.—Male (46933), length of carapace 25, length of horn 5.8, width of carapace 14 mm.

Range.—Florida Keys; West Indies.

Material examined.—

Florida: Hawk Channel; ½ mile SE. by S. of SE. end of Duck Key; 14 feet; rky.; January 27, 1903; station 7429, *Fish Hawk;* 1 male (46933).

Cuba; 1914; Henderson and Bartsch, *Tomas Barrera* Expedition: Between Cape San Antonio and Cape Cajon; 2 to 12 fathoms; on bottom varying from pure sand to weedy; station 12; 1 female (48740). Bahia Honda; June 7; 1 female (48673).

Jamaica: Port Antonio; J. E. Duerden, collector; Institute of Jamaica; 1 male (21235).

St. Thomas; 2 small males (Copenhagen Mus.).

Guadeloupe; Saussure; 1 male, 1 female (Geneva Mus.).

MACROCOELOMA EUTHECA (Stimpson)

Plate 170, fig. 1; plate 171, fig. 1

Pericera eutheca Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 112 (type-localities, off French Reef, 15 fathoms, and west of Tortugas, 37 fathoms; types not extant).—A. Milne Edwards, Crust. Rég. Mex., 1873, pp. 58 and 200, pl. 15A, figs. 1–1c. Not Aurivillius, K. Sv. Vet.-Akad. Hand., vol. 23, pt. 1, 1889, p. 55, pl. 2, fig. 1.

Macrocoeloma eutheca Miers, *Challenger* Rept., Zool., vol. 17, 1886, pp. 80 and 82.—Not Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 251.—Rathbun, Bull. Labor. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 257.

Diagnosis.—Rostral spines separated by a U-shaped sinus. Carapace much constricted behind orbits. Orbital tubes very long.

Description.—Carapace subtrapezoidal, very narrow behind orbits. A spine on gastric, cardiac and intestinal prominences, a spinule at summit of branchial region, and one strong spine at lateral angle, directed outward and backward, and in line with cardiac spine. Rostrum small, horns slender, parallel for at least one-half their length, interspace U-shaped, tips slightly divergent. Orbital sheath directed obliquely forward, upward and outward, and prolonged well beyond the ventral face of the basal antennal article; its margin is provided with four spines or teeth, one preocular, one postocular, one superior, just in front of closed sinus, and one inferior, belonging to antennal article. Besides the ventral face of this article bears two spines; one outside the movable part of the antenna is long, curved and bent down, the other is near the outer margin and continuous with a suborbital spine and a row of four pterygostomian tubercles.

The arm of the cheliped bears three marginal rows of tubercles, the hand has a partial row above and below. The brown color of the fingers extends nearly their whole length on the inner margin but only to about the middle on the outer margin.

Measurements.—Male (station 24), entire length of carapace 27 mm., length, measured from between rostral horns 24, greatest width at orbits 15.2, greatest branchial width 23, branchial width without spines 18, width at narrowest point behind orbits 10 mm.

Range.—Bahama Banks; Florida Keys; West Indies; Panama (Atlantic side). Depth, 30 to 117 fathoms.

Material examined.—

Bahama Banks; May 18, 1893; State University of Iowa Expedition; 1 young female (20020).

Miami, Florida; 30 fathoms; J. B. Henderson; 1 male, 1 ovigerous female, 1 young (46932).

Off Key West, Florida; Sand Key Light bearing W. NW., Key West Light bearing N.; 60 fathoms; station 24, State Univ. Iowa Exped.; 1 male (Mus. S. U. I.).

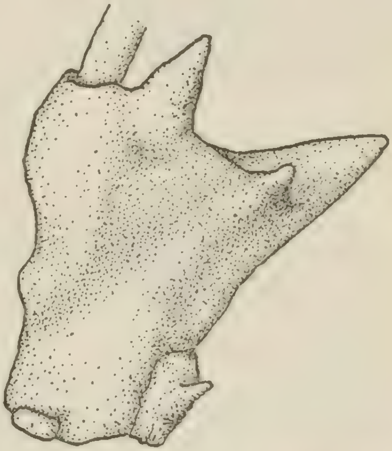

FIG. 137.—MACROCOELOMA EUTHECA (46932), BASAL ANTENNAL ARTICLE, × 11

Off Sand Key, Florida; 50 fathoms; May, 1913; J. B. Henderson; 1 male (46066).

Off Havana, Cuba; May 26, 1893; State Univ. Iowa Exped.; 1 young male (Mus. S. U. I.).

Off Frederickstadt, St. Croix; lat. 17° 37′ 55″ N.; long. 64° 54′ 20″ W.; 117 fathoms; R. brk. Sh.; temp. 65° F.; January 5, 1879; station 132, U. S. C. S. S. *Blake;* 1 female, ovigerous (2850, M. C. Z.).

Barbados; 1918; Barbados-Antigua Expedition, University of Iowa: SW. of Pelican Island, 1 mile; 38 fathoms; fine coral fragments; May 13; station 1; 1 male (Mus. S. U. I.). W. by N. of telegraph station; ½ mile off shore about edge of drop off; 60 to 70 fathoms; tangles; June 1; station 66; 1 female (Mus. S. U. I.).

Near Colon, Panama; lat. 9° 32′ 00″ N.; long. 79° 54′ 30″ W.; 34 fathoms; brk. Sh.; April 2, 1884; station 2146, *Albatross;* 1 male (52686).

MACROCOELOMA INTERMEDIUM Rathbun

Plate 170, fig. 2; plate 171, fig. 2

Macrocoeloma eutheca Rathbun, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 251, except synonymy. Not *Pericera eutheca* Stimpson.

Macrocoeloma intermedium Rathbun, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 75 (type-locality, off Havana, 163 fathoms; holotype, male, Cat. No. 9492, U.S.N.M.).

Diagnosis.—Rostral horns separated by a V-shaped sinus. Basal half of rostrum with outer margins convex. Postero-lateral spine behind widest part of carapace.

Description.—Carapace oblong, width at orbits subequal to width at branchial regions, excluding branchial spines. Constriction behind orbits much less than in *eutheca*. Three median spines, gastric, cardiac and intestinal, the latter slender and curved. A larger, similar spine behind postero-lateral angle and a little above it on the carapace a spinule or tubercle. Lateral margin rough with spinules, one or two of which are hepatic. Orbital sheaths much shorter than in *eutheca;* margin armed with four spines or teeth, one preocular, one postocular and one inferoposterior spine; above some crenulations and a tooth behind the sinus. Basal antennal article armed with two long spines, the outer of which forms a submarginal spine on the orbital tube. Rostrum large, base very broad and with convex lateral margins, horns divergent, separated by a V-shaped interspace.

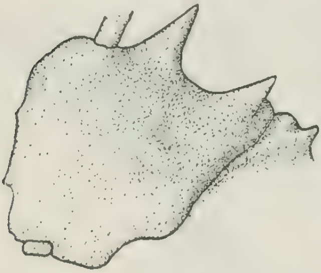

Fig. 138.—Macrocoeloma intermedium (9492), basal antennal article, × 6

Pterygostomian region tuberculate.

Chelipeds with about four short, stout, blunt spines on upper margin of merus; carpus granulate; manus smooth.

Measurements.—Male, holotype, length of carapace measured from posterior margin to tip of rostral horn 25, length measured from between rostral horns 21.2, greatest width at orbits 16, greatest branchial width 18, branchial width without spines 16.1, width at narrowest point behind orbits 12 mm. Male (Copenhagen Mus.), entire length of carapace 29.6, orbital width 18.6, branchial width without spines 19.7, length of horns 4.2 mm.

Range.—West Indies; Panama.

Material examined.—

Off Havana, Cuba; *Albatross:* Lat. 23° 10′ 36″ N.; long. 82° 20′ 20″ W.; 122 fathoms; Co.; May 1, 1884; station 2168; 1 female (7756). Lat. 23° 10′ 51″ N.; long. 82° 19′03″ W.; 163 fathoms; wh. br. Co.; Jan. 17, 1885; station 2323; 1 male, holotype (9492).

Off Roseau, Dominica; 40 fathoms; A. H. Verrill; 1 male (32512).

West Indies; 1 female (Copenhagen Mus.).

Near Colon, Panama; lat. 9° 32′ 00″ N.; long. 79° 54′ 30″ W.; 34 fathoms; brk. Sh.; April 2, 1884; station 2146, *Albatross;* 1 male (7780).

MACROCOELOMA CONCAVUM Miers

Plate 170, fig. 3; plate 171, fig. 3

Macrocoeloma concava Miers, *Challenger* Rept., Zool., vol. 17, 1886, pp. 79 and 81, pl. 10, figs. 2–2*b* (type-locality, Fernando Noronha, 7 to 20 fathoms; type in British Mus.).

Macrocoeloma concavum Rathbun, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 576; Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 75.

Diagnosis.—Rostral horns triangular, separated by a V-shaped sinus. A spine present on urogastric region. A transverse row of five spines in line of cardiac spine. A strong protogastric spine.

Description.—Body and legs covered with a short, close pubescence, with some longer curled hairs. Carapace very convex, deeply concave on hepatic regions; dorsal surface armed with ten spines, disposed as follows: Three small spines in a triangle on gastric region, of which the posterior, or mesogastric one is the largest; a urogastric, a cardiac and an intestinal spine; a strong spine at lateral angle of carapace, and in the same transverse line with this and the cardiac spine, a dorsal, branchial spine. A few tubercles in front of the mesogastric spine. Lateral margins of carapace tuberculated, the tubercles continued in an oblique series over pterygostomian regions nearly to antero-external angle of buccal cavity. Rostrum flat, intermediate in size between those of *M. eutheca* and *M. intermedium;* outer margins straight or concave; horns separated by a V-shaped interspace as in *intermedium.* The orbits are less elongate than in the two preceding species; besides a blunt preocular and postocular tooth there are two or three tubercles on the upper margin, and three teeth or lobes on the lower margin, the middle one of which belongs to the basal antennal segment. This segment has also two equal spines, one on the anterior and one on the outer margin of the ventral face; behind the latter are a few tubercles.

Merus of chelipeds armed with tubercles on the margins, four on the upper margin being the largest; also two tubercles on outer surface, one on lower surface; inner surface granulate. Carpus granulate, a small tubercle at inner angle. Palm granulate on inner surface, also a tubercle at proximal end.

Measurements.—Female (24214), length of carapace measured from posterior margin to tip of rostral horn 35.8, length measured from between horns 32.8, greatest width at orbits 21.5, greatest branchial width 33.2, branchial width without spines 28.6, width at narrowest point behind orbits 18.1 mm.

Range.—Porto Rico; Brazil, as far south as Bahia (Miers). Shallow water to 20 fathoms.

Material examined.—

Off Vieques, Porto Rico; February 10, 1899; *Fish Hawk:* Culebrita lighthouse, NE. by N., 10 miles; 15 fathoms; Co.; temp. 26° C.; station 6091; 1 female (24214). Point Mula Lighthouse, E. by N., 10¾ miles; 12½ fathoms; Co.; temp. 27° C.; station 6095; 1 male (24221).

Off Cape St. Roque, Brazil; lat. 6° 59′ 30″ S.; long. 34° 47′ 00″ W.; 20 fathoms; brk. Sh.; 79° F.; station 2758, *Albatross;* 1 female (21934).

Genus MICROPHRYS Milne Edwards

Microphrys MILNE EDWARDS, Ann. Sci. Nat., ser. 3, Zool., vol. 16, 1851, p. 251; type, *M. weddelli* Milne Edwards.

Milnia STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 179; type, *M. bicornutus* (Latreille).

Omalacantha STREETS, Proc. Acad. Nat. Sci. Philadelphia, ser. 3, vol. 1, 1871, p. 238; type, *O. hirsuta* Streets=*Microphrys bicornutus* (Latreille).

Eumilnia KINGSLEY, Proc. Boston Soc. Nat. Hist., vol. 20, 1879, p. 145; type, *E. error* Kingsley = *M. platysoma* Stimpson. Not *Fisheria* Lockington.

Carapace broadly pyriform, somewhat depressed, dorsal surface uneven and tuberculate or nodose, a small marginal spine or tubercle at lateral angle of branchial region; preocular spine usually developed. Orbits small, circular, with closed fissures. Eyes small. Rostral horns moderate or small, divergent. Basal segment of antenna considerably dilated, armed with a sizable spine at the antero-external angle, which is visible in dorsal view; the movable segments of the peduncle and the flagellum are not concealed by the rostrum.

Merus of outer maxillipeds distally truncated, the antero-external angle somewhat produced and rounded and the antero-internal angle emarginate.

Chelipeds larger than ambulatory legs, the palm compressed and more or less enlarged. Fingers hollowed at tip and in the male gaping.

Legs diminishing rapidly in length from first to fourth pair, the merus and carpus usually armed with spines; dactyli slightly curved.

Abdomen of both sexes with seven separate segments.

Restricted to America.

KEY TO THE SPECIES OF THE GENUS MICROPHRYS

A¹. Two spines on hepatic margin. Two large spines on margin of branchial region near lateral angle..weddelli, p. 496.
A². Two spines lacking on hepatic margin.
  B¹. No flattened, imbricated lobes on side walls of carapace.
    C¹. A very prominent, oblong, oblique areole or nodule on anterior branchial region.

D¹. Three teeth or spines on basal segment of antenna, viz, one at antero-external angle, one behind it on margin, one small at base of movable segment.

E¹. Carapace very granulate. A slender, sharp spine at lateral angle of carapace ---------------------------------- **branchialis**, p. 502.

E². Carapace nodose, nodules nearly smooth. A conical lobe at lateral angle of carapace ------------------------ **triangulatus**, p. 505.

D². Two teeth only on basal segment of antenna, no tooth at base of movable segment. A tooth on infra-orbital margin just outside antennal segment. A spine at lateral angle of carapace. Oblique branchial nodule divided in two ------------ **interruptus**, p. 504.

C². Oblique areoles or nodules on anterior branchial region not very prominent. No tooth on infra-orbital margin just outside antennal segment. An elongate spine at antero-external angle of basal antennal segment, and a tubercle behind it on margin ---- **bicornutus**, p. 489.

B². Two flattened, usually imbricated lobes on side walls of carapace, one hepatic, one branchial.

C¹. Carapace with many well marked granules; and considerably longer than broad.

D¹. Two spines at widest part of branchial region. Two large tubercles on intestinal region. A marginal lobe or tubercle on the basal segment of the antenna behind the antero-external spine. **platysoma**, p. 497.

D². Three spines at widest part of branchial region. Four large tubercles on intestinal region. No marginal tubercle on the basal segment of the antenna behind the antero-external spine, although the margin is thickened ------------------------- **antillensis**, p. 498.

C². Carapace with few granules, hairy, not much longer than broad, typically with four long spines on each branchial region ---- **aculeatus**, p. 500.

ANALOGOUS SPECIES ON OPPOSITE SIDES OF THE CONTINENT

Atlantic	Pacific
antillensis.	*platysoma.*
interruptus.	*branchialis.*

Species on both sides of the continent: *weddelli.*

MICROPHRYS BICORNUTUS (Latreille)

Plate 175

Pisa bicornuta Latreille, Encyc. Méth., Hist. Nat., Insectes, vol. 10, 1825, p. 141 (type-locality, *Nouvelle Hollande;* type in Paris Mus.).

Pericera bicorna Milne Edwards, Hist. Nat. Crust., vol. 1, 1834, p. 337 (type-locality, Antilles; type in Paris Mus.).

Pisa bicorna Gibbes, Proc. Amer. Assoc. Adv. Sci., vol. 3, 1850, p. 170.

Pericera bicornuta Guérin, in La Sagra's Hist. of Cuba, 1856, p. xii.—von Martens, Arch. f. Naturg., vol. 38, 1872, p. 85, pl. 4, fig. 5.—Gundlach and Torralbas, An. Acad. Habana, vol. 36, 1899 (1900), p. 363, text-fig.; reprint, 1917, p. 20, pl. [5], fig. 11.

Pericera bicornis Saussure, Mém. Soc. Phys. Hist. Nat. Genève, vol. 14, 1858, p. 427 [12], pl. 1, fig. 3 (type-locality, Antilles; type in Geneva Mus.).

Milnia bicornuta Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860; p. 180.

Pisa galibica DESBONNE, in Desbonne and Schramm, Crust. Guadeloupe, 1867, p. 18 (type-locality, Guadeloupe; cotype in Paris Mus.).

Pisa purpurea DESBONNE, in Desbonne and Schramm, Crust. Guadeloupe, 1867, p. 18 (type-locality, Guadeloupe; cotype in Paris Mus.).

Omalacantha hirsuta STREETS, Proc. Acad. Nat. Sci. Philadelphia, ser. 3, vol. 1, 1871, p. 238 (type-locality, Isthmus of Panama; female holotype in Mus. Phila. Acad. Nat. Sci.).

Microphrys bicornutus A. MILNE EDWARDS, Nouv. Arch. Mus. Hist. Nat., vol. 8, 1872, p. 247; Crust. Rég. Mex., 1873, p. 61, pl. 14, figs. 2–4.

Microphrys bicornuta KINGSLEY, Proc. Acad. Nat. Sci. Philadelphia, vol. 31, 1879, p. 386.

Diagnosis.—Carapace tuberculate. A marginal spine at branchia angle. A tubercle on margin of basal antennal segment behind antero-external spine. Claws spotted.

Description.—Carapace subtriangular, moderately hairy, all the raised parts covered with rounded tubercles and two or three short spines on the branchial region; a spine at the lateral angle, which is situated far back. A line of four tubercles arches upward on intestinal region. Rostrum from a half to a third the length of the remainder of the carapace; horns either divergent throughout or divergent at base with extremities curving inward. Spine at anterior angle of basal segment of antenna flat, obtuse; behind it on the margin a tubercle or in the old a short stout spine. Preorbital angle rectangular.

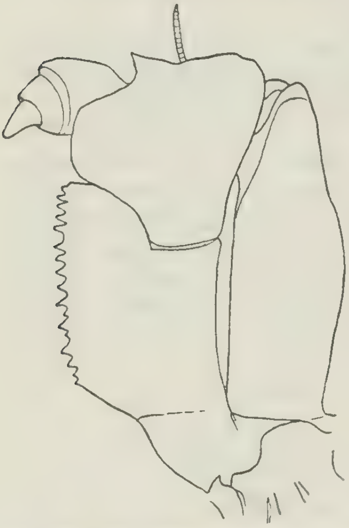

FIG. 139.—MICROPHRYS BICORNUTUS (7580), MAXILLIPED, × 8.4

Chelipeds spotted, the spots persisting in alcohol for many years. Arm with three or four tubercles or short, blunt spines above. Fingers gaping.

Legs hairy, margins a little rough.

Color.—Variable. Carapace often a dull yellowish brown or a bright purplish rose; chelipeds grayish-white, covered with small, round, purplish spots.

Measurements.—Male (7580), total length of carapace 36.4, length on median line 30.2, width with spines 26, without spines 23.6 mm.

Habitat.—A very common species on coral reefs. It is often disguised by the wealth of foreign objects, such as sponges, anemones, hydroids, algae, etc., which become attached to it.

Range.—Beaufort, North Carolina; Bahamas and Florida Keys to Desterro, Brazil; Bermudas. The locality given by Latreille is an error.

Material examined.—See table, pages 491–495.

Material examined of Microphrys bicornutus

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
North Carolina:	° ′ ″	° ′ ″			°C						
Fishing grounds, off Beaufort.	34 20 00 Course E. 1	76 49 00 mile	13.5	Co. S. Sh		Sept. 6, 1913	7913	*Fish Hawk*	1 y	53324	
Do	34 19 05 ¼ mile SE.	76 48 00 of buoy	16.5	hrd		July 20, 1915	8293	do	3	51054	
South Carolina: Charleston						1852			1 sm. ♂	340, M. C. Z.	
Bahamas:											
Green Turtle Cay								E. A. Andrews	4	20705	
New Providence						1886		*Albatross*	2 ♀ (1 ovig.)	11369	
East side of Andros Island, near Lighthouse south of South Bight, Long Bay Key district.						May 14, 1912		Paul Bartsch	1 y. ♀ 1 ♂	45615 45619	Encrusted with ascidian.
Green Cay			4			June 30, 1903		B. A. Bean	1 y	31066	From Geogr. Soc. Baltimore.
Bahamas								Dr. Bryant	1 ♂ 1 ♀ 1 ♂ 1 ovig. ♀	53073 53074	From Boston Soc. Nat. Hist.
Florida:											
Biscayne Bay, near Cape Florida.								U. S. Fish Com.	1 ♂ 1 ♀	31471	
Cape Florida						1884		Edward Palmer	11 1 y	9360 16063	
Off Biscayne Key			*Feet* 16–34			May 29, 1912		Paul Bartsch	2 ♀	45630	
Broad Creek			(1)	grsy		Nov. 24, 1906		Pine and Bean	1 ♂	33146	
Broad Creek, ocean front.						Dec. 17, 1906		do	1 ♀	33139	
Ragged Key			(2)			May —, 1913		J. B. Henderson	7 ♂ 4 ovig. ♀	46031	
Indian Key			(3)					H. Hemphill	11 ♂ 9 ♀	15117	
Lower Metacumbe Key				Grs		1885		do	1 ♂	15114	
Do						Dec. 4, 1906		Pine, Vandergrifft, and Bean.	1 ♀	33149	
Grassy Key Lake	2 miles NW. by N. of Channel Key.		8	rky		Jan. 29, 1903	7441	*Fish Hawk*	1 ♀	46729	
Hawk Channel	1⅛ mile E. by S. of W. end of Lower Metacumbe Key.		*Fath.* 3	barry		Feb. 18, 1903	7464	do	1 ♂	47068	

[1] Shallow.

[2] On reef.

[3] Below low tide.

Material examined of Microphrys bicornutus—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
Florida—Continued.	° ′ ″	° ′ ″	*Fath.*		°*C*						
Hawk Channel	1¼ mile S. by W. of SE. point of Long Key.		2.5	barry		Feb. 18, 1903	7463	*Fish Hawk*	1♂ 1♀ 2 y	46960	
			Feet								
Do	½ mile SE. by S. of SE. end of Duck Key.		14	rky		Jan. 27, 1903	7429	do	1♀ 1 y. ♀	53323 52685	
Do	1 mile N. NW. ½ W. of East Washerwoman Key.		16	rky		do	7428	do	1♂	46935	
Do	3⅛ miles N. ¾ E. of Sombrero Light.		11.5	rky		do	7427	do	2♂	46783	One has Rhizocephalid parasite.
Duck Key				Co				do	1♂	50539	Thin shell.
Knights Key								H. Hemphill	2♂	15112	
North of Knights Key Channel.	⅝ mile N. ½ E. of Hog Key.		7	rky		Jan. 22, 1903	7419	*Fish Hawk*	1♀	46782	
Bird Key						1889		*Grampus*	3♂ 6♀ 1 y 1♂ 2♀	15207 26364	
Key West								H. Hemphill	210	9354	
Do								C. N. E. Eliot	2 y	22989	
Do								J. S. Kingsley collection.	2♂	53049	From Boston Society of Natural History.
Key West Harbor						1884		Edward Palmer	2♂	15115	
Sand Key Reef, off Key West.						May, 1911		J. B. Henderson	2♂ 1 ovig. ♀	46785	
Sand Key						May, 1913		do	1 y	46046	
Dry Tortugas, in moat				Co				T. W. Vaughan	2♂	50540	
Dry Tortugas						1915		do	1 ovig. ♀	53400	From outside of floating live-car.
Dry Tortugas reefs						1884		Edward Palmer	6♂ 4♀	9362	From corals and sponges.
Do								J. B. Henderson	1♀	46784	
Garden Key, Dry Tortugas.						Dec. 25, 1912		*Fish Hawk*	4♂ 1♀ 1 y	50538	
Bush Key						June, 1921		Paul Bartsch	13♂ 47♀ (43 ovig.).	56216	
Straits of Florida	24 44 00	83 26 00	37			1877–78	10	*Blake*	1	2852, M. C. Z.	
Off Cape Sable	E. end of Sawyer Key, S. ¼ W., 2¼ miles.		4.75	rky		Dec. 22, 1902	7390	*Fish Hawk*	3♀	46728	
Do	24 58 05	81 28 30	5	rky		Dec. 19, 1902	7375	do	1♂	46934	

Do.	25	01	00	81	25	30	4.5	spkled. S. Sh.		do.	7373	do.	1 ♀	46959	
Do.	25	00	55	81	22	15	4	rky		do.	7372	do.	1 ♂ 1 ♀	46781	
Do.	25	09	45	81	18	35	3.25	rky. Co.		Dec. 17, 1902	7351	do.	1 ♀	46727	
Marco.												H. Hemphill	1 ♀	16056	
St. Martins section	28	26	00	83	02	30	7.5	rky. Co.	13	Jan. 15, 1902	7215	*Fish Hawk*	1 ♀	46726	
Do.	28	42	30	83	09	45	7	S. brk. Sh. Grs	12.2	Jan. 17, 1902	7225	do.	1 ♀	46958	
North Key section	28	50	15	83	23	15	10	R. Co. Sh.	17	Nov. 28, 1901	7187	do.	1 y	46723	Soft shell.
Do.	28	52	45	83	07	00	5.75	rky	16.1	Dec. 9, 1901	7209	do.	1 ♂	46987	
Off Cedar Keys	Cedar Keys Light, N. ¾ E., 21¾ miles.						5.75	Co.	° F 63.45	Jan. 11, 1913	21	do.	1 y	50996	
Aucilla Section	29	49	00	84	06	15	6	R. Co.	° C 15	Dec. 5, 1901	7192	do.	1 ♀	46725	
Do.	29	51	00	84	06	00	4.5	R. Co. Sh.	14	do.	7191	do.	1 ♂	46724	
Cuba:															
Cape San Antonio										1914		Henderson & Bartsch, *Tomas Barrera* Exped.	1	48655	Caught by copper sulphating on reef.
Punta Colorado							2-3	Sh. Grs.		do.	10	do.	1 ♂	48743	
Cabañas								S. Sh. Grs. M.		June 8-9, 1914	16	do.	16 ♂ 23 ♀	48661	
Do.										do.		do.	2 ♂ 4 ♀ (3 ovig.)	48665	Do.
Los Arroyas										May 20, 1914		do.	3 ♂ 3 ♀	48669	
Esperanza										May 11, 1914	1, 2	do.	1 ♂ 1 ♀	48654	
Cuba												Guérin collection	1	Phila. Acad. Nat. Sci.	Gift of T. B. Wilson.
Jamaica:															
Montego Bay								Coral reef		July 12, 1910		C. B. Wilson	1 ♂	43082	
Do.										July 15, 1910		do.	2 ♂ 1 ♀	43079	
United Fruit Co.'s wharf, Montego Bay.								*Ulva*		July 5, 1910		E. A. Andrews	1 ♂ 1 ♀ 1 y	43078	Covered with algae.
Sea View Ladder, Montego Bay.										Aug. 30, 1910		do.	1 ♂ 2 y	43077	
Bogue Islands, Montego Bay.								Mangrove roots.		July 2, 1910		do.	1 ♂ 3 ♀ (2 ovig.)	43076	
Do.										July 6, 1910		do.	1 ♀	43075	
Do.								Mangrove roots.		June 20, 1910		C. B. Wilson	1 y	43083	With sponges, ascidians, etc.
Do.								do.		June 23, 1910		do.	2 ♂	43081	
8 miles east of Montego Bay.								Coral reef		July 20, 1910		do.	2 ♂	43080	
Umbrella Point										July 14, 1910		E. A. Andrews	1 ♂ 1 ♀ 1 y	43073	
Snug Harbor								R.		Aug. 30, 1910		do.	1 ovig. ♀	43074	
Jamaica										Mar. 1-11, 1884		*Albatross*	7 ♂ 10 ♀	16057	
Do.												T. H. Morgan	1	17203	
Do.										1910		E. A. Andrews	1 ♂	43072	
Porto Rico:															
Mayaguez								Coral reef		Jan. 23, 1899		*Fish Hawk*	1 ♂	24198	
Do.										Jan. 20, 1899		do.	1 ♂ 1 ♀	24384	
Mayaguez Harbor										do		do.	1 ♀	24199	
Boqueron Bay										Jan. 25, 28, 1899.		do.	5 ♂ 2 y	24385	

Material examined of Microphrys bicornutus—Continued

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″	*Feet*								
Porto Rico—Continued.											
Porto Real						Jan. 27, 1899		*Fish Hawk*	1♀	24386	
Guanica Bay						Jan. 28, 1899		do	1♀	24194	
Reefs at Guanica						Jan. 29, 1899		do	2♂	24387	
Ponce						Jan. 30, 31, 1899.		do	6♂ 3♀	24389	
Reefs at Ponce						Jan. 30, 1899		do	9♂ 1♀ 1 y.	24388	
Playa de Ponce reef						Feb. 1, 1899		do	7♂ 8♀	24390	
Arroyo						Feb. 4, 1899		do	1♀	24391	
Lighthouse reef, Arroyo						Feb. 3, 1899		do	3♀	24195	
Caballo Blanco reef, Vieques.						Feb. 7, 1899		do	3♂ 2♀	24211	
Ensenada Honda, Culebra.						Feb. 9, 11, 1899.		do	7♂ 3♀ 8 y.	24208	
Hucares						Feb. 13, 1899		do	3♀	24197	
Fajardo						Feb. 17, 1899		do	4	24223	
St. Thomas:											
St. Thomas						1884		*Albatross*	39	16186	
St. Thomas, on piles near town.						July 7, 1915		C. R. Shoemaker	1♀	49929	Gift of Carnegie Institution.
St. Thomas, lagoon						July 9, 1915		do	1♂ 1 y.	50543	Do.
St. Thomas, shore						July 6, 1915		do	1 ovig. ♀	50545	Do.
St. Eustatius: Tumble-Down-Dick Bay.			15	stony		Sept. 17, 1905		J. Boeke	1 y. ♀	Leiden Mus.	Concealed by colony of sponges.
Barbados:											
Barbados, shore								H. M. Lefroy	1♂ 1♀	26409	
Barbados						May 8, 1890		W. H. Brown, U. S. Eclipse Exped. to W. Africa.	1♂	14883	
Old Providence Island						1884		*Albatross*	2♂ 1♀	16185	
Panama:											
Colon (Aspinwall)						Nov. —, 1880		J. A. McNiel	12	4784, M.C.Z.	From Peabody Acad. Sci.
Near Colon	9 32 00	79 54 30	34	brk. Sh.		Apr. 2, 1884	2146	*Albatross*	1 y.	16187	
Porto Bello						Apr. 24–28, 1911.		Meek and Hildebrand, Smithson. Biol. Survey.	1♀	44187	Soft shell.
Fox Bay						Mar. 22, 1912		do	1♂ 2♀ 1♂ 3♀	56537 Field Mus.	

Colon Import & Export Co. Trading Station, Playa de Dama.						May 18, 1915		Chas. G. Holland, U. S. S. *Leonidas*.	1♂	50542	
Isthmus of Panama								J. A. McNeil	1♀	Phila. Acad.	Holotype of *Omalacantha hirsuta*.
Colombia:											
Puerto Colombia (Sabanilla).						Mar. 16–22, 1884.		*Albatross*	1♀	16058	
Santa Marta			2					C. F. Baker	1♀	22553	
Curaçao:											
Schottegat			0.25	muddy		June 21, 1905		J. Boeke	1♂	Leiden Mus.	
Schottegat, lagoon			1	algae		July 9, 1905		do	1 y. ♀	do	
Caracas Bay				sponge, coral		1920		C. J. van der Horst.	3♀ 2♂ (1 ovig.) 1 y.	56857, 56860, 56865	
Trinidad								W. O. Crosby	1♂ (1 ovig. ♀)	53072	Gift of Boston Soc. Nat. Hist. Covered with actinians.
Brazil:											
Island of Santa Anna								C. F. Hartt	1♂	1931, M.C.Z.	
Island of Fernando Noronha.						1876–1877		R. Rathbun, Hartt Explor.	1♂ 1♀	19959	
Natal						1911		Fred Baker, Stanford Exped.	1♂	46722	
Pernambuco						1876–1877		R. Rathbun, Hartt Explor.	1	41128	
Rio Formoso, Pernambuco.						do		do	1♂ 1♀	19960	
Maceio coral reef, Alagoas.						July —, 1899		A. W. Greeley, Branner-Agassiz Exped.	5♂ 5♀	25753	
Plataforma, Bahia			(4)			1876–1877		R. Rathbun, Hartt Explor.	3♂ 3♀	19958	
Porto Seguro								Hartt and Copeland, Thayer Exped.	2♂ 1♀	1927, M.C.Z.	
Abrolhos Islands						Dec. 27, 1887		*Albatross*	1♂ 1♀ 1♂ 1♀	21941 18614	
Victoria								Hartt and Copeland, Thayer Exped.	2♂ 1 ovig. ♀	1928, M.C.Z.	
Desterro, Sta. Catharina.						Jan. —, 1866		Fr. Müller	2♀ (1 ovig.)	1930, M.C.Z.	
Bermudas:											
Hungry Bay								F. G. Gosling	2♂ 1 y.	25447	
Tuckers Island						Jan. 16, ——		Geo. Hawes	1♀	13796	
Bermuda								F. V. Hamlin	1♂	4024	From Wesleyan University.

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[4] Tide pools.

MICROPHRYS WEDDELLI Milne Edwards

Plate 271, figs. 2–7

Microphrys weddelli Milne Edwards, Ann. Sci. Nat., ser. 3, Zool., vol. 16, 1851, pp. 251 [31] and 291 [71], pl. 10, figs. 1 and 2 (type-locality, Peru; type in Paris Mus.).

Microphrys weddellii A. Milne Edwards, Crust. Rég. Mex., 1873, pl. 14, figs. 1–1*c;* 1875, p. 60.

Diagnosis.—Carapace very little longer than wide. Two marginal spines on hepatic region, two large spines on margin of branchial region at widest part of carapace. A long spine on carpus of first three legs.

Description (after A. Milne Edwards).—Body and legs with little hair; there are only those stiff, hooked hairs which adorn the rostrum, the prominent parts of the carapace, and the upper part of the feet. Carapace pyriform, very wide at the branchial regions. The regions are little areolated and bear on their prominent parts some feebly marked tubercles; on the post-branchial lobes, however, these tubercles are more elevated and become spiniform. A line of pearllike granulations extends parallel to the posterior margin to a point above the fourth pair of feet.

Frontal horns of medium length, pointed and divergent. On either side there is a stout spine belonging to the basal segment of the antenna. Preorbital angle little advanced, bearing a small spine. Lateral margins rough with spines; two very small on the hepatic region, three of the same size on the epibranchial lobe, two others, large and strong, arm the metabranchial lobe.

Chelipeds of male very strong; hand very high and a little compressed; fingers gaping. In the female, the chelipeds are slender and the hand almost cylindrical. In both sexes the arm has about three spines above. Legs short and stout, those of the second pair are longer than the succeeding, and are armed on the merus and carpus with a series of sharp spines: one spine on the carpus of the first three pairs.

Color.—Carapace reddish brown; feet the same color, clouded with violet.

Measurements.—Total length of carapace 36, greatest width of same 33 mm.

Range.—From Ecuador to Chile; Guadeloupe.

Material examined.—

Paraca Bay, Peru; U. S. C. S. S. *Hassler;* 1 male (2095, M. C. Z.).

Peru; cotypes (Paris Mus.).

Peru; Guérin collection; T. B. Wilson, donor; 1 male, 1 female (Mus. Phila. Acad. Nat. Sci.); perhaps cotypes; labeled (by Guérin probably) "n. g. and n. sp., Cat. du Mus. de Paris."

Caldera, Chile; May 16, 1872; U. S. C. S. S. *Hassler;* 1 male (1932, M. C. Z.).

West coast of South America; 1858; Möller, collector; 1 specimen (Copenhagen Mus.).

Guadeloupe; specimens described by A. Milne Edwards (Paris Mus.).

Additional record.—Bay of St. Elena, Ecuador (Nobili).

MICROPHRYS PLATYSOMA (Stimpson)

Plate 176, figs. 1 and 2

Milnia platysoma STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 180 (type-locality, Cape St. Lucas; type not extant).

Microphrys platysoma A. MILNE EDWARDS, Crust. Rég. Mex., 1875, p. 62.—RATHBUN, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 72 (part; not Atlantic specimens); Proc. U. S. Nat. Mus., vol. 38, 1910, pp. 535 and 574, pl. 50, fig. 3 (part: only Lower California specimens).

Pisoides ? celatus LOCKINGTON, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 66 [4], (type-localities, La Paz, Mulege Bay, Port Escondido, San José Island, all in the Gulf of California; types not extant).

Microphrys depressa STREETS and KINGSLEY, Bull. Essex Inst., vol. 9, 1877, p. 103; not *Fisheria depressa* Lockington, 1877.

Microphrys error KINGSLEY, Proc. Boston Soc. Nat. Hist., vol. 20, 1879, p. 145 (type-locality, Lower California; type not extant).

Diagnosis.—Two laminiform processes on antero-lateral wall of carapace. Two branchial spines, one at lateral angle, the other in a transverse line with same. A lobe on margin of basal antennal segment behind antero-external spine.

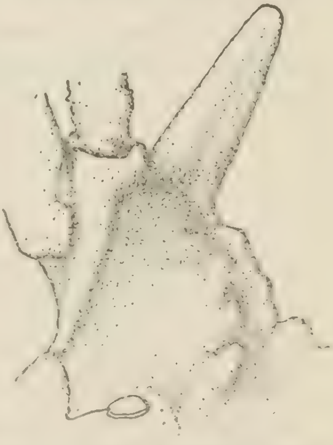

FIG. 140.—MICROPHRYS PLATYSOMA (2922), BASAL ANTENNAL ARTICLE. × 13.3

Description.—Carapace depressed, tuberculate and granulate; areole at inner angle of branchial region very finely granulate; two laminiform processes on the antero-lateral wall, one on the hepatic region, the other on the branchial region, the latter not projecting in an imbricated manner. The surface of the hepatic process is in one plane, with the anterior end acute and projecting forward; there may be, however, at the middle of the upper edge a tubercle which projects outward. Between the hepatic and branchial processes and below their level there is a spine; two branchial spines, one of which is on the postero-lateral angle and the other farther in but on the same transverse line. On the posterior margin there is a row of tubercles which increase in size toward the middle, those of the middle pair larger than the others. Rostral horns slender, directed forward, about one-sixth the length of rest of carapace. Antennal spines about half the length of rostral spines; the margin of the antennal segment behind the spine curves outward, forming a shallow lobe; preocular spines acute, half the length of antennal spines.

The arm has a dentate, laminate superior crest; wrist tuberculate; palm less than twice as long as broad; fingers widely gaping, the pollex being strongly curved downward.

Legs sparsely hairy and with a few spines and tubercles; propodal joints with a prominent rounded distal laminiform process for articulation of dactylus.

Color.—Reddish-brown above, hands and under parts white marbled with bright red, the latter predominating on the upper surface of the chelipeds (Lockington).

Measurements.—Male (20292), entire length of carapace 17.2, width of same without spines 13.2, with spines 13.7, length of rostral spines 2.5 mm.

Range.—Lower California to Panama.

Material examined.—

Patos Island, Gulf of California, Mexico; anchorage, 4½ fathoms; Apr. 23, 1921; Fred Baker, collector, California Academy Expedition; 1 male (Cal. Acad.).

La Paz Bay, Lower California, Mexico; L. Diguet, collector; 9 specimens (Paris Mus.); 1 male, 1 female (20292).

Mazatlan, Mexico; A. Agassiz; 1 small male (2096, M. C. Z.).

Taboga Island, Panama; June, 1894; J. Zetek; 1 male (48791).

Island at end of breakwater, Panama Bay, Panama; February 5, 1912; Meek and Hildebrand, Smithson. Biol. Surv.; 1 male (56539).

MICROPHRYS ANTILLENSIS Rathbun

Plate 176, figs. 3 and 4

Microphrys platysoma Rathbun, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 72 (part: specimens from Porto Rico).—Hay and Shore, Bull. Bur. Fisheries, vol. 35, 1915–16 (1918), p. 459, pl. 38, fig. 9.

Microphrys antillensis Rathbun, Proc. Wash. Acad. Sci., vol. 33, 1920, p. 24 (type-locality, off Montego Bay Point, Jamaica; holotype, Cat. No. 43017, U. S. Nat. Mus.).

Diagnosis.—Two processes on antero-lateral wall of carapace, the oblong branchial process not rimmed nor sharply defined. Three branchial spines about lateral angle. No lobe on margin of basal antennal segment behind antero-external spine. Four equally large tubercles on intestinal region.

Description.—I formerly assigned some small Porto Rican specimens to the species *platysoma*, but additional material indicates that the Atlantic form should be separated from the Pacific.

In *M. antillensis* the general aspect is the same as in *platysoma*. The antennal spines are longer, slenderer and less divergent; the

Material examined of Microphrys antillensis

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″									
North Carolina:											
Beaufort Harbor			3-5					*Fish Hawk*	1♂ 1 ovig. ♀	51080	
Fishing grounds off Beaufort.	31 21 00 Course N. ½ mile.	76 53 30	15	Co. fne. S. Sh. M.		Sept. 7, 1913	7956	do	1 ovig. ♀	51021	
Do	Course NW. by W., toward buoy.		15	Rough		Aug. 11, 1914	8211	do	1♂	51032	
Off Cape Fear	33 50 00 Baldhead, NE. by E. ½ E.; Cape Fear, E. ½ N.	78 04 30	7. 25	Sh. Co		Sept. 24, 1913	7986	do	1♂	55842	
Cuba:											
Between Cape San Antonio and Cape Cajon.			2-12	Pure S. to weedy.		May 21, 1914	12	Henderson & Bartsch, *Tomas Barrera* Exped.	2♂	48730	
Bahia Honda			2-12	M. Co		June 4-5, 1914	15	do	1 y. ♀	48731	
Jamaica: Off Montego Bay Point.						June 28, 1910		E. A. Andrews	1♂	43017	Holotype.
Porto Rico:											
Mayaguez Harbor	Custom House, NE. ¾ E., 4½ miles.		4-6	Co		Jan. 20, 1899	6065	*Fish Hawk*	1♂	21138	
Boqueron Bay						Jan. 28, 1899		do	1♀	21136	
Off Vieques Island	Point Mula lighthouse, S. SW. ⅜ W., 5¾ miles.		14	Co. S		Feb. 8, 1899	6085	do	1 y. ♀	21137	

basal segment itself, is narrower, and its outer margin, though thickened, does not project laterally in a lobe as in *platysoma*. The laminiform process on the hepatic region is not entirely flat, and has a tooth at the anterior end which projects outward but not forward except in a large specimen. The flattened, lateral process on the branchial region is not as sharply defined as in *platysoma*, and is devoid of a rimmed edge. Besides the two spines at the widest part of the carapace characteristic of *platysoma*, there is a spine below the margin which forms a broad triangle with the other two. Four, instead of two, tubercles are equally enlarged on the intestinal region.

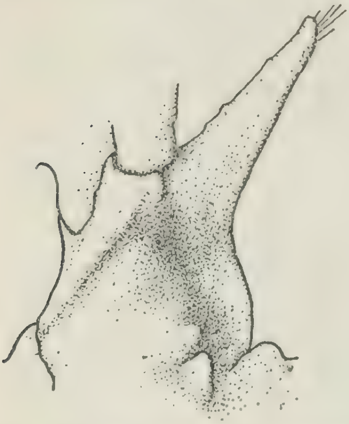

FIG. 141.—MICROPHRYS ANTILLENSIS, MALE (43017), TOTAL LENGTH OF CARAPACE 14 MM., BASAL ANTENNAL ARTICLE

Measurements.—Male, holotype, entire length of carapace 14, length of horns 2.4, width of carapace including spines 11.6, excluding spines 10.5 mm. Male (51032), entire length of carapace 18.3, length of horns 3.3, width of carapace including spines 15.6, excluding spines 14 mm.

Range.—North Carolina; Cuba; Jamaica; Porto Rico.

Material examined.—See table, page 499.

MICROPHRYS ACULEATUS (Bell)

Plate 271, fig. 1

Pisa aculeata BELL, Proc. Zool. Soc. London, vol. 3, 1835 (1836), p. 171 (type-locality, Galapagos Islands; type not extant); Trans. Zool. Soc. London, vol. 2, 1836, p. 50, pl. 9, fig. 7.

Milnia aculeata STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 52.

Microphrys aculeatus A. MILNE EDWARDS, Crust. Rég. Mex., 1875, p. 63.—RATHBUN, Proc. U. S. Nat. Mus., vol. 38, 1910, pp. 536 and 574, pl. 45, fig. 4.

Microphrys platysoma RATHBUN, Proc. Washington Acad. Sci., vol. 4, 1902, p. 285 (part: Galapagan specimen); Proc. U. S. Nat. Mus., vol. 38, 1910, pp. 535 and 574 (part: Peruvian and Galapagan specimens, not pl. 50, fig. 3).

Diagnosis.—Carapace short and broad, tubercles few. Two raised disks on antero-lateral wall. Four spines on each branchial region, two marginal. No tooth or lobe on basal antennal segment behind antero-external spine.

Description.—Carapace shorter and broader than in *platysoma;* hairy; when the hairs are removed the surface is seen to be covered with small pits. Tubercles and granules few; an arch of 5 tubercles across the gastric region; 2 tubercles near the outer edge of each branchial region; a row of tubercles above the posterior margin. Some fine granules on the inner areole of the branchial region; granules also on the protogastric regions, while a row of granules leads forward onto each horn. Typically four spines on each branchial region, three of which form a transverse row with the conical cardiac region, the outer spine of the row being marginal; the fourth spine is also marginal but lower and further forward than the third. Between the second and third spines there may be an additional, smaller, secondary spine. The first or innermost spine (that next the cardiac region) may be obsolete and represented by only a low, conical swelling. Each spine and tubercle bears a tuft of long, curled hairs; a band of similar hairs runs along the antero-lateral margins and along each side of the gastric region to the tips of the rostral horns. On the antero-lateral wall are two much raised, oval disks, one hepatic and one branchial; the side of the postorbital cup is also flattened.

The margin of the basal antennal segment bears no tooth nor lobe behind the slender, antero-lateral spine.

The arm has three triangular teeth above. The first leg has a long spine on the carpus and another near the distal end of the merus; the second leg has a spine on the carpus only.

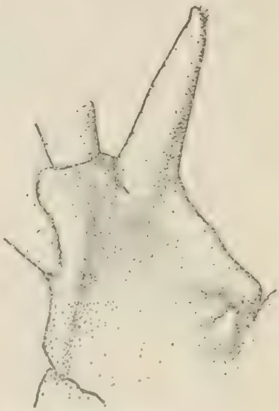

Fig. 142.—Microphrys aculeatus (25677), basal antennal article, × 12.7

Measurements.—Ovigerous female (40464), entire length of carapace 15.7, width of carapace without spines 13.8 mm.

Range.—Ecuador (Nobili); Peru; Galapagos Islands.

Material examined.—

Lobos de Afuera, Peru; rocky bottom along shore, which is covered with growth of seaweed; March 18, 1907; R. E. Coker, collector; 2 females (40464); received from Peruvian Government.

North end of Ferrol Bay (Chimbote), Peru; rocks between tide lines; March 1; R. E. Coker, collector; 1 young female (40465); received from Peruvian Government.

Reef north of Tagus Hill, Tagus Cove, Albemarle Island, Galapagos Islands; March 16, 1899; Stanford University; 1 female (25677).

MICROPHRYS BRANCHIALIS Rathbun

Plate 176, figs. 5 and 6; plate 270, fig. 1

Microphrys, species, RATHBUN, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 254.
Microphrys branchialis RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 577, pl. 41, fig. 5 (type-locality, Magdalena Bay, Lower California, 12 fathoms; holotype, Cat. No. 21576, U.S.N.M.); Proc. Washington Acad. Sci., vol. 4, 1902, p. 285.

Diagnosis.—Postero-lateral angle armed with one spine. Antero-lateral margin unarmed and without imbricated processes. Anterior branchial region much swollen. Three marginal spines or teeth on basal segment of antenna.

Description.—Anterior branchial region with an oblique oblong protuberance, highest posteriorly, sloping gradually downward anteriorly and covered with tubercles. Gastric tubercles as follows: Three median, a cluster of three on each side anteriorly, and a transverse row at posterior end. One genital tubercle; 10 cardiac, of which 2 are median. Posterior branchial region with several tubercles, arranged mostly in two longitudinal rows; postero-lateral angle with a spine curving upward. A row of blunt tubercles above posterior margin. Margin of hepatic region with a small tubercle; vertical side of branchial region with scattered tubercles, and two lines of tubercles continued to pterygostomian region. Anterior and lateral regions hairy. Rostrum deflexed; with two flattened, triangular, acute horns, pointing forward and separated by a V-shaped sinus reaching one-half length of rostrum. Preorbital tooth subacute, denticulate; two superior orbital fissures on either side of a rounded lobe; postorbital tooth blunt.

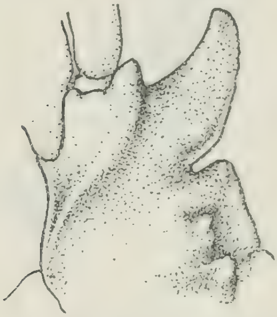

FIG. 143.—MICROPHRYS BRANCHIALIS (21576), BASAL ANTENNAL ARTICLE, × 13.2

Basal antennal article armed at antero-lateral angle with a long, broad, blunt spine or tooth, curved inward and upward and with crenulated outer margin; a short blunt tooth at base of second article; a tooth on outer margin forming part of wall of orbit, and a laminate tubercle near postero-lateral angle.

Chelipeds of male one and a third times length of carapace; scattered tubercles on upper surface of arm and wrist; a longitudinal row on outer surface of arm, and two or three tubercles at proximal end of outer lower margin. Palm long and narrow, margins parallel, superior length over twice width and more than one and a half times dactylus. Pollex not arched downward as in *M. platysoma.* Chelipeds of female slenderer and about nine-tenths length of carapace.

Material examined of Microphrys branchialis

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°*F*						
Mexico:											
Off Abreojos Point	26 14 00	113 13 00	48	yl. M	53.9	May 3, 1888	2834	*Albatross*	1♂	21942	
Magdalena Bay	24 35 20 Sail Rock, Entrada Point, S. 53° W.; Redondo Point, S. 15° W.	111 59 35	13.5	S. brk. Sh.		Mar. 21, 1911	5678	do	1♂	55764	Immature.
Do.	24 32 00	111 59 00	12	fne. gy. S.		May 2, 1888	2831	do	1♂ 2♀	21576	Male is holotype.
Northwest of Guaymas	28 16 00	111 54 00	22	fne. gy. S.	63	Mar. 23, 1889	3012	do	1♀	16774	

Material examined of Microphrys triangulatus

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.
	Latitude N.	Longitude W.								
	° ′ ″	° ′ ″								
Gulf of California, Mexico:										
Agua Verde Bay						Apr. 2, 1911		*Albatross*	1♂	47118.
San Josef Island						Mar. 31, 1911		do	1♂	55761.
Off La Paz Bay	24 22 30	110 19 30	8	brk. Sh.		Apr. 30, 1888	2824	do	2♂ 2♀	21943.
Do	24 22 15	110 19 15	7	brk. Co.		do	2825	do	1♀	21944.
Off Cerralvo Island	24 12 00	109 55 00	9.5	Sh.		do	2826	do	1♂	21945.
Do.	24 11 45	109 55 00	10	Sh.		do	2827	do	1♂	21946.
Do.	24 11 30	109 55 00	10	Sh.		do	2828	do	8♂ 5♀	21947.
Galapagos Islands: Reef North of Tagus Hill, Tagus Cove, Albemarle Island.						Mar. 16, 1899		Stanford Univ.	1♂	25676.

First leg reaches middle of palm in male, to end of chelipeds in female; merus of legs armed with spines and tubercles on superior and outer surfaces; carpus with two or three spines; margins of legs hairy.

Variations.—Varies in the number of tubercles, length of postero-lateral spine, prominence of oblong branchial protuberance, length of rostral horns and antero-external spine of basal joint of antenna.

Measurements.—Male, holotype, entire length of carapace 15.3, width of same including spines 14, excluding spines 11.8 mm.

Range.—From Abreojos Point, Lower California to Gulf of California. Depth, 12 to 48 fathoms.

Material examined.—See table, page 503.

MICROPHRYS INTERRUPTUS Rathbun

Plate 174, figs. 1–3

Microphrys interruptus RATHBUN, Proc. Biol. Soc. Washington, vol. 33, 1920, p. 24 (type-locality, Ensenada de Cajon, off Cape San Antonio, Cuba; holotype, Cat. No. 48753, U.S.N.M.); Univ. Iowa Studies in Nat. Hist., vol. 9, 1921, p. 86, pl. 2, fig. 5.

Diagnosis.—A broken, oblique ridge on branchial region. Two marginal teeth or spines on basal segment of antenna. Legs unarmed.

Description.—Carapace very uneven. The branchial region bears a high, oblique elevation, which in this species is in two parts, the anterior part elongate and bilobed at summit, the posterior part small and conical; in the same line is the stout, curved, sharp-tipped spine at the lateral angle of the carapace. Transversely inward from this spine is a shorter, conical, blunt spine or tubercle; on either side of the cardiac region an areole bearing a few granules; the small and finely granulated areole at the inner angle of the branchial region is depressed. The mesogastric region is for the most part elevated and nodulous; near its anterior end there is a tubercle which is one of five forming a transverse curve across the gastric region. Cardiac region nodulose. Besides a short submarginal row of granules above each postero-lateral margin, there is a row of four tubercles arched upwards above the posterior margin, and underneath the arch, two smaller tubercles side by side. A few granules on the vertical slope of the hepatic and branchial regions.

Carapace wider than usual anteriorly, the orbits being more tubular. Preorbital tooth not produced, tip tuberculiform. Rostral horns flat and sharp, their outer margins parallel. Spine of basal antennal segment very short, broad, flat, curved, blunt, and projecting obliquely outward rather than forward; it is followed by a tuberculiform tooth on the outer margin. The segment is wide, as in *branchialis*, but the tubercle on its ventral surface is much lower, almost obsolete.

The right cheliped, the only one present, is rather feeble, and is probably not fully developed; the arm has a row of a few spaced tubercles above; the carpus a few granules outside.

The legs have a row of long hairs on each side of the dorsal aspect but are devoid of spines; the first two pairs are very slender. Last segment of male abdomen shorter than in *branchialis*.

Measurements.—Male, holotype, entire length of carapace 10.7, length of horns 1.4, width of carapace including spines 8.4, excluding spines 8.2 mm. Male (Antigua), entire length of carapace 16.7, length of horns 2.4, width of carapace including spines 13.6, excluding spines 13.3 mm.

Range.—Cuba; Antigua; Barbados.

Material examined.—

Ensenada de Cajon, off Cape San Antonio, Cuba; May 22–23, 1914; station 11, *Tomas Barrera* Expedition; Henderson and Bartsch, collectors; 1 male, holotype (48753), with Rhizocephalid parasite attached to abdomen.

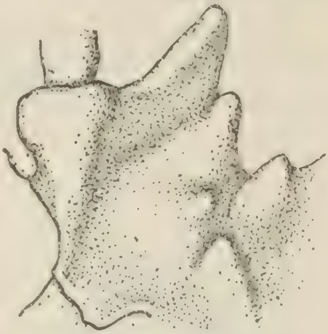

FIG. 144.—MICROPHRYS INTERRUPTUS (48753), BASAL ANTENNAL ARTICLE, × 16

Fort Barclay, English Harbor, Antigua; July 9, 1918; Barbados-Antigua Exped., Univ. Iowa; 1 male, 1 young female (Mus. S. U. I.).

Needham Point, Barbados; May 18, 1918; Barbados-Antigua Exped., Univ. Iowa; 1 male (Mus. S. U. I.).

MICROPHRYS TRIANGULATUS (Lockington)

Plate 177

Mithraculus triangulatus LOCKINGTON, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 73 [11] (type-locality, Gulf of California; types not extant).

Mithrax triangulatus KINGSLEY, Proc. Boston Soc. Nat. Hist., vol. 20, 1879, p. 149.

Microphrys triangulatus RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 578.

Microphrys branchialis RATHBUN, Proc. Washington Acad. Sci., vol. 4, 1902, p. 285 (part: specimens from Galapagos Islands).

Diagnosis.—Carapace short and broad, nodulose, nodules almost smooth. Three marginal teeth or lobes on basal segment of antenna. Chelipeds of male very long and strong, palms high.

Description.—Carapace little longer than broad, thick and nodulose, the nodules ornamented sparingly with low granules, so as to appear almost smooth. The largest nodule is the anterior branchial, which is oblique, elongate and overhangs the lateral wall of the carapace. Behind and below this lobe there is a short blunt spine or lobe at the lateral angle of the carapace. The most prominent granules are on the anterior portion of the carapace, namely, two on the summit of each protogastric lobe, a row of three on each epigastric lobe, one or two at base of each preorbital tooth. Two large tubercles on intestinal region, from each of which a submarginal line of granules extends outward.

Rostrum short, deeply divided; horns broad, inner margin straight, outer margin convex, sinus narrow. Preorbital lobe little advanced, blunt, granulate; postorbital cup also little advanced. Basal antennal segment broad, bearing two broad blunt lobes on the margin, each lobe outwardly arcuate, also a small subacute tooth at the base of the next or movable segment, and a tubercle on the ventral surface near the postero-external angle.

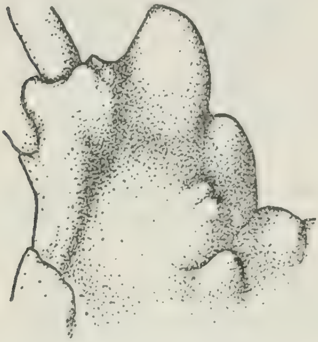

FIG. 145.—MICROPHRYS TRIANGULATUS (21943), BASAL ANTENNAL ARTICLE, × 14

Chelipeds of male very strong, one and two-thirds times as long as carapace. Arm tuberculate on upper margin and inner and outer surfaces; wrist nearly smooth; palm unusually high, its upper length about one and two-thirds times its height; immovable finger a little convex below, a large tooth on the dactyl a little behind middle of gape.

Merus joints of legs with about two rows of large tubercles some of which are conical and subacute; a few of the same are on the carpus, from one to three of these being enlarged; two tubercles on each propodus.

Color.—In spirits, uniform reddish (Lockington).

Measurements.—Male (21943), entire length of carapace 15.4, length of horns 1.2, width of carapace between tips of postero-lateral tubercles or spines 14.3, length of cheliped 23.7, length of palm along upper margin 7.9, greatest width of palm 4.9 mm.

Variation and affinity.—A small male from the Galapagos has a sharp spine at the postero-lateral angle of the carapace, while some of the granules on the dorsal surface are sharper than usual. This gives it somewhat the appearance of *M. branchialis.* Indeed there is a curious resemblance between the two species. *M. triangulatus* looks like a *branchialis* with the carapace shortened and widened, especially the anterior portion, while the protuberances, which are of similar shape, are shoved up into greater prominence and their surfaces smoothed off.

Range.—Lower part of Gulf of California; Galapagos Islands. Shallow water to 10 fathoms.

Material examined.—See table, page 503.

Genus TYCHE Bell

Tyche BELL, Proc. Zool. Soc. London, vol. 3, 1835 (1836), p. 172; type, *T. lamellifrons* Bell; Trans. Zool. Soc. London, vol. 2, 1836, p. 57.—A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 125.

Glischirus GISTEL, Natur. Thierreichs., 1848, p. XI; substituted for *Tyche* Bell, supposed to be preoccupied by *Tychus* Leach, 1817.

Platyrinchus DESBONNE, in Desbonne and Schramm, Crust. Guadeloupe, 1867, p. 3; type, *P. trituberculatus* Desbonne.

Carapace oblong-oval, flattened, with lamellate expansions in front and behind; front very wide, with four horns, the two lateral forming anterior angles of orbit. Orbits covered by a lamellate prolongation which conceals the ocular peduncles nearly to their extremities; below there is no orbital floor, and the ocular peduncles are entirely uncovered. Antennae concealed beneath rostrum; basal segment somewhat enlarged, a small blunt point at its antero-external angle; following articles cylindrical. The external maxillipeds exhibit a very remarkable arrangement, not shown in any other genus: The external branch or exognath is narrow and has at its base a falciform prolongation which is bent around forward and lodged in a groove of the ischium of the endognath. The merus is much extended backward and then inward so as to cut deeply the anterior border of the ischium.

Chelipeds little enlarged. Ambulatory legs slender, with very hooked dactyli.

Known only from the two species here described.

KEY TO THE SPECIES OF THE GENUS TYCHE

A¹. Preorbital horns subparallel. Posterior margin of carapace not medially notched -- **lamellifrons, p. 508.**

A². Preorbital horns strongly divergent. Posterior margin of carapace medially notched -- **emarginata, p. 508.**

Analogous species on opposite sides of the continent: *emarginata* (Atlantic); *lamellifrons* (Pacific).

TYCHE LAMELLIFRONS Bell

Plate 273, figs. 1–6

Tyche lamellifrons BELL, Proc. Zool. Soc. London, vol. 3, 1835 (1836), p. 173 (type-locality, Panama; type in Brit. Mus.); Trans. Zool. Soc. London, vol. 2, 1836, p. 58, pl. 12, figs. 3, 3*f–j*.—STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 10, 1871, p. 97.—A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 126.

Tyche brevipostris [for *brevirostris*] LOCKINGTON, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 74 [12] (type-locality, Port Escondido, Gulf of California; type not extant).

Diagnosis.—Preorbital horns subparallel. Posterior margin of carapace entire or faintly trilobate. Posterior half of carapace, measured from median gastric tubercle, as wide as long.

Description.—General aspect that of a dried leaf (Lockington). Carapace very wide in front; gastric region swollen, cardiac and branchial regions depressed. Lateral borders straight and nearly parallel at hepatic regions, rounded at branchial regions. Posterior border lamellate. Front with two small, flat horns curved toward each other, extremities bispinose. The superior orbital border extends in the form of a plate over the eye and projects nearly forward in a strong horn. A deep fissure separates orbit from hepatic margin.

Chelipeds of male slender, smooth, shorter than the next pair of legs; fingers touching only at their extremity. Ambulatory legs very slender and cylindrical.

Color.—A dull, uniform brown, paler beneath (Bell).

Measurements.—Male, cotype (Bell), length of carapace including rostrum 7 lines (17.8 mm.), width 4 lines (10.2 mm.). Ovigerous female (Paris Mus.), length 23.1, width 14.2 mm.

Range.—From Gulf of California to Panama; on sandy bottom (Bell). To a depth of 10 fathoms.

Material examined.—

Gulf of California; lat. 24° 22′ 15″ N.; long. 110° 19′ 15″ W.; 7 fathoms; brk. Co.; April 30, 1888; station 2825, *Albatross;* 1 male (21905).

Lower California; Diguet, collector; 1 ovigerous female (Paris Mus.).

TYCHE EMARGINATA White

Plate 272; plate 273, figs. 7–12

Tyche emarginata WHITE, Ann. Mag. Nat. Hist., vol. 20, 1847, p. 206 (type-locality, West Indies; type in Brit. Mus.).—STIMPSON, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 119.—A. MILNE EDWARDS, Crust. Rég. Mex. 1873, pl. 13, figs. 1–1*e;* 1878, p. 126.—AURIVILLIUS, K. Svenska Vetensk.-Akad. Handl., vol. 23, No. 4, 1889, p. 43, pl. 3, fig. 4.

Platyrinchus trituberculatus DESBONNE, in Desbonne and Schramm, Crust. Guadeloupe, 1867, p. 3, pl. 3, figs. 7 and 8 (type-locality, Guadeloupe at Moule, Northwest Bay; type probably not extant).

Material examined of Tyche emarginata

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
Florida:	° ′ ″	° ′ ″			°*C*						
Pepperfish Key Section	29 21 00	83 32 00	6.75	rky	16.7	Nov. 21, 1901	7160	*Fish Hawk*	1 ♀	46770	
North Key Section	29 00 00	83 18 45	5.75	rky. Co	15.3	Nov. 28, 1901	7182	do	1 ♀	46730	
Do	28 54 00	83 30 30	11	R. Co. S	17	do	7185	do	1 ♀	46731	
Do	28 52 15	83 24 00	7.5	R. Co	16.2	Nov. 27, 1901	7183	do	1 ♀	46771	
Do	28 47 55	83 16 30	8	rky. grsy	17	Dec. 9, 1901	7211	do	1 ♂	46772	
Off Key West			(1)			1893	46	State Univ. Iowa Bahama Exped.	1 ♂	20018	
			Feet								
Pigeon Key Lake	1½ miles NW. of Knights Key.		10.5	rky		Jan. 7, 1903	7409	*Fish Hawk*	1 ♂	47105	Covered with algae.
Inside Sombrero Key								U. S. C. S. S. *Bache.*	1 ♂	1948, M.C.Z.	
Bahamas:			*Fathoms*								
Off Little Cat Island	On submerged bank connecting Cat Id. with Eleuthera.		3–13			1893		State Univ. Iowa Bahama Exped.	1 ♂	Mus. S. U. I.	
Turks Island									1 ♀	Amer. Mus.	
	Lat. S.				°*F*						
Brazil: Off Cape St. Roque	6 59 30	34 47 00	20	brk. Sh	79	Dec. 16, 1887	2758	*Albatross*	1 ♂	21906	

[1] Shallow water.

Diagnosis.—Preorbital horns strongly divergent and similar to those of the rostrum. Posterior margin medially notched. Posterior portion of carapace longer than wide.

Description.—Distinguished from *T. lamellifrons* by the form of the front, the lateral horns of which are very divergent, longer and more elevated than the median, and by the two lamellate expansions which are prolonged behind the carapace. The gastric region is on a plane much more elevated than the front; it bears three tubercles, of which two are anterior, and the third posterior and median. Dorsal surface of hepatic region concave. There is a large tubercle on anterior branchial lobe and a prominent tuberculate crest on branchial regions above the lateral margin. The cardiac lobe bears three small tubercles.

Chelipeds of male more than twice the length of postorbital part of carapace; palms somewhat dilated and compressed; fingers gaping at base, dentate throughout their whole length. Dactyli of ambulatory legs spinulous on their middle third, the spinules increasing in size distally.

Stout hooked hairs ornament the rostrum, the prominent parts of the carapace and the feet.

Color.—General color yellowish-gray; carapace greenish above, with two triangular white spots; blackish above the base of the legs (Desbonne).

Measurements.—Female, length of carapace 35, width 21 mm. (A. Milne Edwards).

Range.—West coast of Florida to Bahamas, West Indies and Cape St. Roque, Brazil. Shallow water to 20 fathoms.

Material examined.—See table, page 509.

Other records.—Tortugas (A. Milne Edwards); St. Thomas (Aurivillius); Guadeloupe (Desbonne).

Family PARTHENOPIDAE

Parthenopiens and *Cancériens cryptopodes* Milne Edwards, Hist. Nat. Crust., vol. 1, 1834, pp. 347 and 368.

Parthenopinea Dana, U. S. Explor. Exped., vol. 13, Crust., 1852, pp. 77 and 136.

Parthenopinea and *Parthenopidae* Miers, Journ. Linn. Soc. London, Zool., vol. 14, 1879, pp. 649 and 667.

Parthenopidae Alcock, Journ. Asiat. Soc. Bengal, vol. 64, 1895, p. 257.—Borradaile, Ann. Mag. Nat. Hist., ser. 7, vol. 19, 1907, p. 480.

Chelipeds not specially mobile, usually much longer and heavier than the other legs, and with fingers bent on the hand at an angle towards the side on which the fixed finger is set. Second article of antennae small, short, and not fused with epistome or front. Orbits well made. Hooked hairs almost always wanting. Male openings coxal. The palp of the external maxillipeds is articulated at the antero-internal angle of the merus. (Borradaile.)

The family is divided into two subfamilies, the Parthenopinae and the Eumedoninae. All of the genera represented in American waters belong to the first, which is much the larger subfamily.

Subfamily PARTHENOPINAE

Parthenopinae Miers, Journ. Linn. Soc. London, Zool., vol. 14, 1879, p. 668.

Carapace commonly equilaterally-triangular, sometimes subpentagonal or ovate-pentagonal, and sometimes semicircular or semielliptical in outline; cardiac and gastric regions usually so deeply marked off from the branchial regions on either side as to make the dorsal surface of the carapace trilobed; chelipeds vastly longer and more massive than the ambulatory legs; rostrum simple or obscurely trilobed. (Alcock.)

KEY TO THE AMERICAN GENERA AND SUBGENERA OF THE FAMILY PARTHENOPIDAE

- A^1. Carapace not laterally expanded over the ambulatory legs.
  - B^1. Carapace tuberculate or eroded.
    - C^1. Basal antennal article short, not reaching front. Merus of cheliped not thigh-shaped . . . **Parthenope**, p. 511.
      - D^1. Chelipeds more than twice as long as carapace.
        - E^1. Carapace ovate-pentagonal, surface little carinate in adult. Subgenus **Parthenope**, p. 513.
        - E^2. Carapace carinate or tuberculate, broadly triangular, with more or less rounded sides . . . Subgenus **Platylambrus**, p. 516.
      - D^2. Chelipeds less than twice as long as carapace, stout and contorted. Subgenus **Pseudolambrus**, p. 528.
    - C^2. Basal antennal article rather long, reaching or nearly reaching orbital hiatus.
      - D^1. Merus of cheliped thigh-shaped, tapering distally. Manus more slender . . . **Thyrolambrus**, p. 531.
      - D^2. Merus subtriangular in cross-section, not tapering distally. Manus stouter . . . **Tutankhamen**, p. 530.
  - B^2. Carapace smooth, except for a few strong spines.
    - C^1. Efferent branchial channels opening at sides of endostome (as is customary in the Oxyrhyncha).
      - D^1. Carapace high, without a strong lateral spine . . . **Solenolambrus**, p. 534.
      - D^2. Carapace depressed, with a strong lateral spine . . . **Leiolambrus**, p. 543.
    - C^2. Efferent branchial channels opening at middle of endostome, as in the Oxystomata . . . **Mesorhoea**, p. 546.
- A^2. Carapace more or less expanded to form a vault in which the ambulatory legs are concealed.
  - B^1. Carapace oval, expanded laterally but not posteriorly. No ridge on pterygostomian region . . . **Aethra**, p. 550.
  - B^2. Carapace subtriangular or pentagonal.
    - C^1. Carapace greatly expanded both laterally and posteriorly. Pterygostomian region smooth, not ridged . . . **Cryptopodia**, p. 553.
    - C^2. Carapace expanded laterally but not posteriorly. Pterygostomian and subhepatic regions traversed by a granulate or crenulate ridge. **Heterocrypta**, p. 554.

Genus PARTHENOPE Weber

Parthenope WEBER, Nomenclator entomologicus, 1795, p. 92; type, *P. longimanus* (Linnaeus).—RATHBUN, Proc. Biol. Soc. Washington, vol. 17, 1904, p. 171. Not *Parthenope* Fabricius, Entom. Syst., Suppl., 1798, p. 315.

Lambrus LEACH, Trans. Linn. Soc. London, vol. 11, 1815, pp. 308 and 310; type, *L. longimanus* (Linnaeus).—ALCOCK, Journ. Asiat. Soc. Bengal, vol. 64, 1895, p. 259, and synonymy.

Carapace either broadly triangular or ovate-pentagonal with short, pointed front. Surface granular, tubercular, or spiny. Eyes inclosed in distinct orbits, with a suture above and hiatus below, the hiatus occupied by the second joint of antennal peduncle. The antennules fold obliquely. Antennae small; their basal joint, which is extremely short and does not reach the front, is wedged in between the antennulary fossa and the large lobe that constitutes floor of orbit. Buccal frame usually quadrangular, sometimes a little narrowed in front; completely closed by the external maxillipeds. Chelipeds usually of immense size and length, out of all proportion to the short, slender ambulatory legs; arm and hand usually prismatic with the borders strongly dentate; fingers much shorter than palm and abruptly curved inward and a little downward. (After Alcock.)

A large genus ranging from the continental slope off southern New England to southern Brazil, from western Mexico to Panama and Galapagos Islands, and throughout the Indo-Pacific region, the Mediterranean sea and eastern Atlantic Ocean.

KEY TO THE AMERICAN SUBGENERA AND SPECIES OF THE GENUS PARTHENOPE

A¹. Chelipeds more than twice as long as carapace.
  B¹. Carapace ovate-pentagonal, surface little carinate in adult. Subgenus **Parthenope**, p. 513.
    C¹. Second segment of abdomen trilobed, lobes conspicuous in dorsal view. A slender spine at tip of rostrum ---------- **agonus**, p. 513.
    C². Lobes or teeth of abdomen invisible in dorsal view. No slender spine at tip of rostrum ---------- **hyponca**, p. 514.
  B². Carapace carinate or tuberculate, broadly triangular, with more or less rounded sides ---------- Subgenus **Platylambrus**, p. 516.
    C¹. Carapace and chelipeds very flat; spine at end of main, dorsal branchial ridge small ---------- **serrata**, p. 516.
    C². Carapace very convex; spine at end of main, dorsal branchial ridge large. Chelipeds not flat.
      D¹. Three larger tubercles on posterior margin, one of which is median.
        E¹. Carapace much broader than long. Manus with 8 to 10 teeth on inner and 10 to 12 on outer margin.
          F¹. Inner oblique row of tubercles on branchial region depressed, situated in branchio-cardiac fossa ---------- **pourtalesii**, p. 521.
          F². Inner oblique row of tubercles on branchial region elevated. **exilipes**, p. 523.
        E². Carapace not much, if any, broader than long. Manus with few good-sized marginal teeth, 6 to 8 on inner, and 3 to 5 on outer margin ---------- **fraterculus**, p. 525.
      D². Four larger tubercles on posterior margin, those of inner pair on each side of middle.
        E¹. Carapace two-fifths broader than long. Marginal teeth elongate, subacute, spiniform ---------- **depressiuscula**, p. 524.
        E². Carapace narrower, two-sevenths broader than long. Marginal teeth shorter, suboblong, blunt, lobiform ---------- **guerini**, p. 525.
A². Chelipeds less than twice as long as carapace, stout and contorted. Subgenus **Pseudolambrus**, p. 528.
  B¹. Antero-lateral margins oblique and nearly straight, without distinct angle. Upper margins of palm 8- or 9-toothed ---------- **triangula**, p. 528.
  B². Antero-lateral margins distinctly angled, the outer part parallel with axis of body. Upper margins of palm respectively 4- and 6-toothed. **excavata**, p. 529.

ANALOGOUS SPECIES ON OPPOSITE SIDES OF THE CONTINENT

Atlantic	Pacific
pourtalesii.	*exilipes.*
guerini.	*depressiuscu la.*

Subgenus PARTHENOPE

Lambrus A. MILNE EDWARDS (restricted), Crust. Rég. Mex., 1878, p. 146; type, *L. longimanus*.—MIERS, *Challenger* Rept., Zool., vol. 17, 1886, p. 92 (part).—ALCOCK, Journ. Asiat. Soc. Bengal, vol. 64, 1895, p. 260.

Parthenope RATHBUN, K. Danske Vidensk. Selsk. Skrifter, 7 Raekke, naturv. og math., Afd. 5, No. 4, 1910, p. 319.

Carapace ovate-pentagonal or subcircular, with the surface granular or pustular and but little carinate in the adult; rostrum usually exceedingly short.

PARTHENOPE (PARTHENOPE) AGONUS (Stimpson)

Plates 178 and 179; plate 275, figs. 1–3

Lambrus agonus STIMPSON, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 131 (type-localities, off the Marquesas, off Carysfort Reef, off Conch Reef, 40 and 49 fathoms; types not extant).—A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 151; 1879, pl. 28, figs. 3–3*c*.

Diagnosis.—Carapace subcircular. A ventral spine on each side opposite cheliped. Chelipeds very long; four or nearly four times as long as carapace. Second segment of abdomen conspicuously three-lobed.

Description.—Carapace ovate-pentagonal or subcircular, about one-fifth broader than long, with rounded sides, without angles; a moderate postorbital constriction, which, however, does not involve a prominent, dentate, pterygostomian ridge which continues from the lower orbit to a point above the cheliped. Depressions between regions not remarkably deep. Surface coarsely punctate or eroded, and with numerous granules and tubercles; the larger tubercles more or less spiniform and arranged as follows: Five on gastric region, of which four are near the middle in a transverse line, and the other, larger, on median line, further back; three in a longitudinal row on cardiac region; one on each side of urocardiac lobe; five on each branchial region, the posterior one being prolonged in a spine; one on each hepatic region. The antero-lateral margin of branchial region is armed with six small teeth; below and behind the last a broad triangular tooth; and still lower down and on the ventral surface a stout spine visible between the ischia of the cheliped and first leg. Median rostral tooth narrow and produced; a few denticles at its base on either side, and an acute forward-pointing tooth over each antennular cavity. Several spines on outer margin of orbit and a small spine on upper surface of eye.

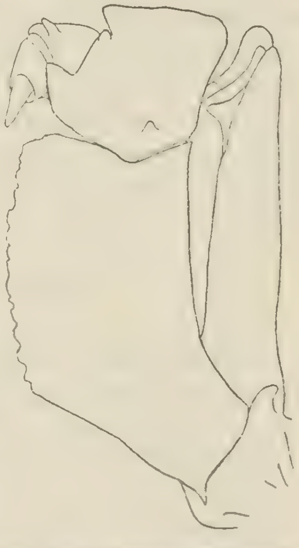

FIG. 146.—PARTHENOPE AGONUS (51009), MAXILLIPED, × 11.7

Chelipeds very long and slender (the arm about 1.33 times width of carapace), their upper surface finely rugose; an irregular row of dentiform tubercles near middle of upper surface of arm and wrist and nearer outer margin of hand; inner and outer margins of arm and wrist with similar tubercles; upon upper margin of hand a series of 18 or 20 irregular teeth, increasing generally in size to a point near the fingers, where they diminish; on the outer margin 4 to 6 larger teeth and many intermediate smaller ones. Legs long, for the genus (first one reaching end of wrist), slender, bare and almost smooth, having only some faint indications of spinules on upper margins of merus joints. A conical spine or tubercle on each side of sternum near base of chelipeds; another on coxal joint of chelipeds. The second segment of abdomen has a sharp transverse crest, forming a prominent lobe in the center and a tooth on each side.

Measurements.—Male (15173), length of carapace 15.4, width of same 18.6, length of arm 24.2 mm.

Variation.—The rostrum may be broadly triangular, subentire, instead of tridentate with marginal denticulations. In the young the pterygostomian ridge is less developed anteriorly and the postorbital constriction is more evident, causing a resemblance to the subgenus *Rhinolambrus* A. Milne Edwards.[57]

Range.—North Carolina; Gulf of Mexico along the coast of Florida to Florida Straits and Cape Florida; West Indies; Trinidad. Depth, 25 to 115 fathoms.

Material examined.—See table, page 515.

PARTHENOPE (PARTHENOPE) HYPONCA (Stimpson)

Plate 275, figs. 4–6

Lambrus hyponcus Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 10, 1871, p. 100 [127], (type-locality, Panama; type not extant).—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 153, pl. 30, figs. 3–3*b*.

Parthenope (*Parthenope*) *hyponcus* Rathbun, Proc. U. S. Nat. Mus., vol. 38, 1910, p. 576.

Diagnosis.—Carapace broadly ovate. Rostrum broadly triangular at extremity. Merus joints of ambulatories with entire margins except extremity of fourth; dactyli naked.

Description.—Carapace subrhomboidal, posterior region being well developed and prominent. One low tubercle on gastric region, two large, prominent ones on cardiac region, one small, spiniform one on posterior margin at median line, and two rather large ones on branchial region, the posterior of which is taller and close to postero-lateral margin. Besides these tubercles there are several other, minute ones, roughly arranged in 8 or 10 longitudinal rows. General surface covered with crowded punctures; two or three small pits in depression

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[57] Crust. Rég. Mex., 1878, p. 148.

Material examined of Parthenope (Parthenope) agonus

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.
	Latitude N.	Longitude W.								
	° ′ ″	° ′ ″			°F					
North Carolina:										
Off Cape Hatteras	35 35 20	74 58 45	27	crs. gy. S.		Oct. 20, 1884	2296	*Albatross*	1♂	7250.
Gulf Stream off Cape Lookout.	34 12 00 23 miles E. of Lookout Lightship, off Beaufort.	76 04 56	47		[1] 67.8	Sept. 3, 1914	8249	*Fish Hawk*	1♀	51009.
Do.	30 miles due S. of Lookout Lightship.					July 28, 1915		do.	1 y. ♂	50457.
Florida:										
South of Pensacola	29 28 00	87 56 00	27	gy. S. brk. Sh.		Mar. 4, 1885	2389	*Albatross*	1♂	9700.
Off Cape San Blas	29 18 15	85 32 00	25	crs. gy. S. brk. Sh.		Feb. 7, 1885	2370	do.	2♂	15172.
South of Cape San Blas	28 44 00	85 16 00	60	gy. S.		Mar. 15, 1885	2404	do.	2♂ 1♀	15173.
Do.	28 45 00	85 02 00	30	gy. S. brk. Co.		do.	2405	do.	3♂ 3♀ (1 ovig.)	15174.
Do.	28 46 00	84 49 00	26	crs. S. Co.		do.	2406	do.	1♂	17879.
West of Charlotte Harbor	26 30 00	83 30 00	33	gy. S. Algae	68	Mar. 23, 1889	5116	*Grampus*	1♂	15213.
Do.	26 30 00	83 19 00	27.5	gy. S. brk. Sh.	67.5	do.	5115	do.	1♂	15327
Southwest of Charlotte Harbor.	26 19 00	83 22 00	31	S. G. bk. Sp.	67.5	Mar. 18, 1889	5107	do.	1♀ y.	15326.
Do.	26 13 00	83 44 00	51	wh. S.	69	do.	5104	do.	1♀	15212.
Do.	26 08 00	83 22 00	33	S. bk. Sp.	69.5	do.	5102	do.	1♂ 1♀	15211.
Northwest of Dry Tortugas.	25 34 30	83 01 00	27	fne. S. bk. Sp. hrd.	68	Mar. 2, 1889	5079	do.	1♀	15210.
Do.	25 34 00	83 07 00	30	fne. S. bk. Sp.	68.5	Mar. 1, 1889	5078	do.	1♂	15325.
Do.	25 34 00	83 28 00	39	G. Co. fne. Sh.	69	do.	5076	do.	2♂	15209.
Do.	25 00 31	82 51 40	25	Sh. Co. Sponges hrd.	68.5	Feb. 16, 1889	5053	do.	1♀	15324.
Off Key West	Sand Key Light bearing W.NW., Key West Light bearing N.		60			June 19, 1893	24	State Univ. Iowa Exped.	2♂ 1♀	Mus. S. U. I.
Do.	Nearly as above		60			do.	26	do.	3♂ 3♀	Mus. S. U. I.
Southeast of Key West	24 25 45	81 46 00	45	Co.	75	Jan. 15, 1885	2318	*Albatross*	1♀	15171.
South by east from Sand Key Light.			61					J. B. Henderson	1 y.	48900.
Gulf Stream, South of Key West, near edge of Pourtales Plateau.			90	co. Fragments				do.	1♂	48902.
Gulf Stream, off Cape Florida.	1 m. E.¼ N. of Fowey Rocks Light.		50	fne. gy. S. Co.	69	Mar. 30, 1903	7516	*Fish Hawk*	1♂ 1♀	49014.
West Indies:										
Mayaguez Harbor, Porto Rico.	Point del Algarrobo, E. 2¾ m.		75–76	rky. S. Co.	68.5	Jan. 20, 1899	6063	do.	1♂	24234.
Off Trinidad	11 07 00	62 14 30	73	bu. M.		Jan. 30, 1884	2120	*Albatross*	1♀	7830.

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[1] Approximate.

between branchial and gastric regions. Antero-lateral margin behind cervical sulcus armed with eight triangular, denticulated teeth, the posterior one but little longer than the others which are equal. Front smooth; rostrum of moderate size, subtriangular, deflexed, sides slightly concave, unarmed, apex obtuse. Chelipeds long, surface smooth above except of merus which has a median tuberculated ridge; edges of merus, carpus and manus armed with small teeth, which on superior edge of merus are spiniform; outer edge of manus with 16 teeth alternating in size; below, the chelipeds are smooth and glabrous except inner edges which are tuberculated; tubercles small. Sternum with a strongly prominent, almost capitate tubercle on each side at base of chelipeds, which also bear a small tubercle on basal joint; these four tubercles are somewhat flattened at top and bent forward. In the female abdomen the segments are each armed with a transverse ridge, more or less developed; on second and third joints this ridge is strongly toothed and on penult joint it appears in form of a median tubercle. (After Stimpson.)

Measurements.—Sterile female, holotype, length of carapace 15.2, width of same 17.2, proportion 1: 1.13; length of merus of cheliped 15.2 mm. (After Stimpson.) Specimen from Mazatlan, sex not given, length of carapace 29, width of same 32, length of arm 30, of hand 32 mm. (After A. Milne Edwards.)

Range.—Mazatlan, Mexico (A. Milne Edwards); Panama (type-locality).

Subgenus PLATYLAMBRUS Stimpson

Platylambrus STIMPSON, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 129; type, *Lambrus crenulatus* Saussure, 1858=*L. serratus* Milne Edwards, 1834.—A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 146.

Enoplolambrus A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 147; type, *L. carenatus* Milne Edwards.

Lambrus MIERS, *Challenger* Rept., Zool., vol. 17, 1886, p. 92 (part).

Carapace carinated or tuberculated, broader than long, broadly triangular with rounded sides and a broad but acute and projecting rostrum; no postocular constriction; chelipeds with the meropodite and palm straight, the former joint prismatic, the latter sharply trigonal, the anterior and posterior borders of both joints sharply laciniate or serrate, as is also the outer edge of the carpus. (Alcock.)

PARTHENOPE (PLATYLAMBRUS) SERRATA (Milne Edwards)

Plates 180 and 181; plate 275, figs. 7–10

Lambrus serratus MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 357, not synonymy (type-locality, *l'Océan indien* [by error]; type in Paris Mus.). Not *Lambrus serratus* White, List Crust. Brit. Mus., 1847, p. 12.

Lambrus lupoides WHITE, List Crust. Brit. Mus., 1847, p. 12, *nomen nudum* (type-locality, West Indies; type in Brit. Mus.).

Lambrus crenulatus Saussure, Mém. Soc. Phys. Hist. Nat. Genève, vol. 14, 1858, p. 429 [13], pl. 1, figs. 4, 4*a* (type-locality, *les mers des Antilles;* type in Geneva Mus.).—Desbonne and Schramm, Crust. Guadeloupe, 1867, p. 21.—Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 129.—Gundlach and Torralbas, An. Acad. Habana, vol. 36, 1899 (1900), p. 301, text-fig. on p. 303; reprint, 1917, p. 12, pl. [2], fig. 5.

Lambrus melanodactylus Desbonne in Desbonne and Schramm, Crust. Guadeloupe, 1867, p. 21 (type-locality, Guadeloupe; type in Guadeloupe Mus.?).

Platylambrus crenulatus Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 129.

Platylambrus serratus A. Milne Edwards, Crust. Rég. Mex., 1878, p. 156 pl. 30, figs. 1–1*c*.

Lambrus granulatus Kingsley, Proc. Boston Soc. Nat. Hist., vol. 20 1879, p. 150 (type-locality, Tortugas, Florida, 9 fathoms; cotype in U. S. Nat. Mus.).

Parthenope (*Platylambrus*) *crenulata* Verrill, Trans. Conn. Acad. Arts and Sci., vol. 13, 1908, p. 417, pl. 28, fig. 5.

Parthenope crenulata Verrill, Trans. Conn. Acad. Arts and Sci., vol. 26, 1922, p. 155, text-fig. 12.

Diagnosis.—Carapace flattened, with a large lateral spine. Suborbital and subhepatic regions deeply and smoothly excavated. Chelipeds over three times in male, two and a half times in female, as long as carapace, multidentate.

Description.—Carapace depressed, about one and a half times as broad as long, antero-lateral margin of branchial region very convex, separated by a long, flat, outward-pointing spine from the concave postero-lateral margin, posterior margin wide and slightly convex. Elevations ornamented with numerous unequal, granulated tubercles, some of those on branchial regions sharp. The deepest depression is that between gastric and branchial regions. Rostrum short, channeled, tridentate; below and outside each lateral tooth a smaller, narrower tooth. Seven or eight triangular teeth on the branchial margin in advance of the lateral spine. Of the tubercles on the posterior and postero-lateral margins seven are noticeably larger than the others, and each terminates a longitudinal or oblique line of tubercles. An excavation of pterygostomian and subhepatic regions reaches infero-exterior margin of orbit, forming, when the chelipeds are retracted, covered afferent passages, the external apertures of which are seen between base of finger and margin of orbit. Chelipeds long and flattened, lower face smooth, outer margin coarsely serrated, nine teeth, alternately large and small, on hand; teeth of inner margin smaller and more numerous (15 or 16 on hand); upper surface showing a few tubercles on hand but more on arm, where there is a longitudinal row near middle. Legs slightly spinulous, in the main smooth; first pair not reaching end of arm. Abdomen of male with segments three to five fused, segment six with a median spine.

Material examined of Parthenope (Platylambrus) serrata

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°C						
North Carolina:											
Off Cape Hatteras	35 25 20	74 58 45	27	crs. gy. S		Oct. 20, 1884	2296	*Albatross*	1♂ 1y. ♀	7249	
Off Cape Lookout	34 38 00	76 12 00	18	fne. gy. S		Oct. 19, 1885	2607	do	1♂ 2♀	18799	
Off Cape Fear	33 37 15	77 35 30	17	crs. yl. S. brk. Sh.		Oct. 20, 1885	2618	do	1♂	17865	
Florida:											
Pensacola						1882		Silas Stearns	1♀	4500	
Off Cape San Blas	29 10 00	85 31 00	30	S. bk. Sp. brk. Sh.		Feb. 7, 1885	2375	*Albatross*	1 chela	9676	
Do	28 45 00	85 02 00	30	gy. S. brk. Co		Mar. 15, 1885	2405	do	1♂	15168	
South of St. George Island.	28 46 00	84 49 00	26	crs. S. Co		do	2406	do	1 y. ♂	49200	
Deadmans Bay section	29 35 20	83 56 00	9.5	S. Co	23	Nov. 7, 1901	7153	*Fish Hawk*	1 y. ♂	49199	
Do	29 24 30	83 49 30	10	R. Co	17	Dec. 6, 1901	7202	do	1 y. ♀	49198	
Do	29 30 15	83 41 30	5.75	S	15.2	do	7204	do	1 y. ♂	49197	
North Key section	28 59 15	83 32 30	9.5	sdy. grsy	17	Nov. 27, 1901	7175	do	3♂ (1 soft shell)	49007	
Pepperfish Key section	29 08 45	83 28 00	6.25	S. G	16	do	7170	do	1♂	49006	
					°F						
West of Charlotte Harbor.	26 39 33	83 23 00	28	S. bk. Sp	66	Mar. 26, 1889	5122	*Grampus*	1♂	15215	
Do	26 33 30	83 15 30	27	fne. wh. S. bk. Sp.		Mar. 18, 1885	2411	*Albatross*	1♀	9827	
Off Anclote	Anclote Light, E. ⅛ S., 14 miles.		8.5	Co	63.95	Jan. 11, 1913	20	*Fish Hawk*	2♂	50458	
					°C						
Highland section	27 43 30	82 58 00	6.5	S	15.5	Jan. 29, 1902	7263	do	1♀	49005	
Off Sanibel Islands	Bell buoy off Sanibel Islands Light, NE., 10 to 2.5 miles.		4.75	Sh. wh. M		Jan. 1, 1913	9	do	1♂ 1♂ 2♀ 2 y	55692 50459	
					°F						
Southwest of Charlotte Harbor.	26 17 30	83 00 00	24	fne. gy. S. bk. Sp.	67	Mar. 21, 1889	5109	*Grampus*	1 y	15217	
Do	26 07 30	82 38 00	18	hrd. S	66	Mar. 17, 1889	5098	do	1 y	15216	
Tortugas			9					Lieut. Jacques	1 y. ♀	55696	Cotype of *L. granulatus.* From Boston Soc. Nat. Hist.
Do						1893		State Univ. Iowa Exped.	3♂	Mus. S. U. I.	

Off Dry Tortugas			16					J. B. Henderson	1 ♂ 1 y	49000
Do			4					do	6 ♂ 3 ♀	18997
About 4 miles east of Dry Tortugas.			15					do	3 ♂	18998
Gulf of Mexico	5 miles off breakwater, NW. Passage to Key West.		6.5					do	1 ♂	18999
Do	Smith Shoal, N. of Key West.		4-5					do	1 y	50373
					° C					
West Channel, entrance to Key West.			6.75	co. S. brk. Sh	19.8	Feb. 13, 1902	7274	*Fish Hawk*	1 y. ♀	49002
Gulf of Mexico	24 46 12	81 53 30	10.25	Co	19	Feb. 21, 1902	7290	do	1 ♀	49016
	Off NW. Channel.									
Off Key West, inside reef.			6	co. S	20	Feb. 13, 1902	7276	do	1 ♂ 1 ovig. ♀	49008
Do			5.25	co. S. G	20	do	7277	do	1 ♂ 2 ♀ 1 y	49003
Do			5.25	co. S. G	20	do	7278	do	2 ♂	49001
Off Key West			(1)			June 26, 1893	45	State Univ. Iowa Exped.	1 ♂ 1 ♀	18675
Do	Key West Light bearing N.		6			June 30, 1893	66	do	1 ♀	Mus. S. U. I.
Do						do	67	do	2 ♂ 1 ♀	Mus. S. U. I.
Florida Bay	25 00 48	81 18 55	3.5	Sp. S. Sh	23	Dec. 19, 1902	7371	*Fish Hawk*	1 ♂ 2 ♀	49010
Do	25 01 00	81 25 30	4.5	Sp. S. Sh	23	do	7373	do	3 ♀	49011
Do	25 10 10	81 28 30	4.75	hrd. gy. S. Sh	23.5	Dec. 17, 1902	7354	do	2 ♂ 2 ♀	49009
Grecian Shoals, Hawk Channel.	¼ mile SW. by S. of Basin Hill Beacon.		2	S. G		Feb. 19, 1903	7469	do	1 ♂ 2 ♀	49012
Key, Biscayne Bay	1 mile N. of Feather Bed Bank.		2	S. G		Mar. 7, 1903	7481	do	1 ♀	49013
Bahamas: Off Governor's Harbor, Eleuthera Island.			5			July 7, 1903		B. A. Bean	1 ♀	31064
West Indies:										
Bahia Honda, Cuba						1893		State Univ. Iowa Exped.	1 ♂	Mus. S. U. I.
Jamaica								T. H. Morgan	1 ♀	17212
Mayaguez Harbor, Porto Rico.						Jan. 20, 1899		*Fish Hawk*	1 y	24235
St. Thomas										Copenhagen Mus.
Piescaderos Bay, Curaçao.			(2)	St		July 21, 1905		J. Boeke	1 ♂	Leiden Mus.

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[1] Shallow.

[2] Very shallow.

Material examined of Parthenope (Platylambrus) pourtalesii

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
New Jersey:	° ′ ″	° ′ ″			°F						
East of New Jersey and south of Marthas Vineyard, Mass.	40 07 00	70 32 00	71	S. Sh. M.	52	Aug. 23, 1881	950	*Fish Hawk*	1 y. ♂ 1 ♂	39938 18797	
Do	40 05 39	70 23 52	86	S. G. Sh. Sponge.	50.5	Sept. 4, 1880	872	do	2 ♀	7308	1 is holotype of *Lambrus verrillii.*
Do	40 05 00 to 40 05 42	70 22 06 to 70 23 00	64–65	Compact fine S. M. brk. Sh.	53–68.5	do	865–7	do	1 ♀	18798	
Do	40 03 00	70 31 00	100	yl. M.	52	Aug. 23, 1881	949	do	2 ♂ 1 ♀	5772 18796	
Do	39 54 00	69 51 30	134	hd. S. Sponges.	52	Aug. 4, 1881	910	do	1 ♀	4559	
North Carolina:											
Off Cape Hatteras	35 10 40	75 06 10	68	gy. M.	71.3	Oct. 19, 1884	2268	*Albatross*	2 ♂	7217, 7218	
Do	35 08 30	75 10 00	49	gy. S.		Oct. 17, 1885	2596	do	1 ♂ 3 ♀	11211	
Off Cape Lookout	Cape Lookout Lighthouse, N. NE., 4¾ miles.		10	blk. M.	°C 27	July 14, 1902	7301	*Fish Hawk*	1 ♂ 1 ♀	49015	
Gulf Stream	30 miles due S. of Cape Lookout Lightship.							do	4	51100	
Off Cape Fear	33 20 00	77 05 00	90	gy. S.	°F 65.8	Apr. 2, 1885	2418	*Albatross*	1 ♀	15170	
South Carolina:											
East of Cape Romain	32 55 00	77 54 00	79	crs. S. bk. Sp.	59.1	Jan. 5, 1885	2311	do	1 ♀	17864	
Do	32 54 00	77 53 30	88	crs. S. bk. Sp.	57.8	do	2312	do	1 ♀	9410	
Florida:											
Off Fowey			75–100			May, 1917	361	*Eolis*, J. B. Henderson.	1 y.	50940	
Do			95			do	362	do	2 y.	50941	
Do			75–90			do	364	do	1 y.	50942	
Off Ragged Key			75			do	365	do	3 y.	50943	
Do			75–90			do	366	do	1 y.	50944	
Off Sambo Key			110					J. B. Henderson	1 ♂	50003	
Do			115					do	1 ♂	50370	
Off Key West	About 10 miles SW. of channel buoy marking entrance of ship channel to Key West.					Apr. 22, 1910		do	1 y. ♂	49001	

Do	Sand Key Light bearing W. NW., Key West Light bearing N.		60			June 19, 1893	24	State Univ. Iowa Exped.	1♂ 1♀	Mus. S. U. I.
Do	Key West Light bearing NW. by N. Sand Key Light, W. by N.		(1)			June 26, 1893	47	do	1♂ 1♀	18676
Off Key West			90			Apr. 21, 1916		J.B. Henderson	1♂	50372
Do			110					do	1 y. ♂ 1 y. ♀	50371
Western Dry Rocks, Key West.			90					do	1 y. ♀	50369
Do			95					do	1♂	50368
Gulf Stream, off Key West.	24 21 55	81 58 25	98	S.	55	Feb. 14, 1902	7279	*Fish Hawk*	1 y. ♀	19143
Off Sand Key						May, 1913		J.B. Henderson	1♂ 1♀	46018
Do	SE. by E. ½ E. of Sand Key.		90					do	1 y	50516
Do	S. of Sand Key		85					do	1♀ 3 y	50515
Pourtales Plateau	10 miles S. of Sand Key, on edge of Plateau.							do	1♂	48883
Do						1893		State Univ. Iowa Exped.	1♀	Mus. S. U. I.
Off Sand Key	Sand Key Light, W., about 8 miles.		15			June 24, 1893	41	do	2♂ 4♀	Mus. S. U. I.
Do	Near preceding		15			do	42	do	1♀	Mus. S. U. I.
Cuba: Off Havana						May 26, 1893		do	1♂ 1 y	Mus. S. U. I.

Color.—Rosy gray, sometimes spotted with black; fingers carmine, teeth bordered with black (Desbonne).

Measurements.—Male (18675), length of carapace 18.5, width of same 27.8, length of cheliped 60.1 mm. Male, Curaçao, length 26, width 37.5 mm.

Habitat.—The arrangement of the chelipeds and the afferent passages excavated below the carapace indicates habitual concealment in the sand with only rostrum, eyes and afferent apertures exposed.

Range.—From Cape Hatteras, North Carolina, via Gulf of Mexico and Bahamas to Bahia, Brazil; Bermudas. Shallow water to 30 fathoms.

Materials examined.—See table, pages 518–519.

PARTHENOPE (PLATYLAMBRUS) POURTALESII (Stimpson)

Plates 182, 183, and 276

Lambrus pourtalesii STIMPSON, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 129 (type-localities, off Conch Reef, French Reef, and American Shoal, 40 to 117 fathoms; types not extant).—A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 149, pl. 30, figs. 2–2*d*.

Lambrus verrillii SMITH, Proc. U. S. Nat. Mus., vol. 3, 1881, p. 415 (type-localities, stations 865 to 867, 872, *Fish Hawk*, southern coast of New England,

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[1] About 80 fathoms.

65 and 86 fathoms; types, Cat. No. 7308, U.S.N.M.); Rept. U. S. Commr. of Fish and Fisheries for 1885 (1886), p. 628 [24], pl. 2, fig. 2.

Lambrus ponstalesi [error for *pourtalesi*] GUNDLACH and TORRALBAS, An. Acad. Habana, vol. 36, 1899 (1900), text-fig. on p. 302; reprint, 1917, pl. [2], fig. 4.

Diagnosis.—Carapace high; regions deeply separated; two large marginal spines, one at lateral angle and one at end of branchial ridge. Arms not flat above. Dactyli of legs furred.

Description.—Carapace broadly ovate-triangular, convex, the branchial regions rather deeply separated from gastric, cardiac, and hepatic regions; the longest spine is at the postero-lateral angle, and has one or two spines at its base; this is not the widest part of the carapace; hepatic margin armed with a small but prominent spine; antero-lateral margin after the cervical suture convex and armed with eight or nine teeth and spines, the first three or four shorter than the next five; post-lateral margin armed with three or four unequal spines besides the large one on the ridge; posterior margin with three larger and several smaller spines. General surface pitted and granulated and covered especially in the elevated parts with granulated tubercles of various sizes; the largest ones are disposed as follows: Four on median line, of which one is gastric, one genital, and two cardiac; two on branchial ridge in line with longest lateral spine. In the branchiocardiac depressions there are two smaller tubercles on each side forming a rectangle; there is a tendency to form several rows of tubercles on branchial regions. Front with a long narrow obtuse tooth with a denticle on each side, a subacute basal tooth, and below and outside the latter, a short spine. Lower surface granulated and tuberculated.

Chelipeds long and very rough, armed with laciniated teeth and spines; merus convex above and bearing a row of unequal spines, posterior margin armed with four or five large spines on proximal half, one near distal end, anterior margin with four or five larger spines and several smaller; the wrist has its largest spine at inner angle; hand with about 10 or 12 triangular spines on outer margin and 8 or 10 on inner margin, broader than those on outer, particularly toward fingers. Merus joints of legs spinulous and also carpus and propodus of last pair; dactyli furred. A tubercle on the sternum at base of cheliped and each of legs 1–3. A large tubercle in middle of each of second to sixth abdominal somites, and a conical tubercle at extremity of segments 2 and 3.

Color.—Palms pinkish brown with suggestion of banding. (Henderson.)

Measurements.—Male (48883), length of carapace 36.3, width of same 47, length of cheliped 122 mm.

Material examined of Parthenope (Platylambrus) exilipes

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
Mexico:	° ′ ″	° ′ ″			°*F*						
Off San Domingo Point, Lower California.	26 07 00	113 32 00	74	fne. gy. S.	55	Apr. 10, 1889	3043	*Albatross*	1♂	17365	Holotype of *exilipes.*
Off Cape St. Lucas, Lower California.	22 52 00	109 55 00	31	rky.	74.1	May 1, 1888	2829	do.	1♂ 2♀	21968	
Off Tres Marias Islands.	21 22 15	106 25 00	80	rky.	51.2	Apr. 18, 1891	3427	do.	1♂ 1♀	4481, M.C.Z.	Cotypes of *hassleri.*
Panama:											
Panama Bay	7 56 00	79 41 30	51.5	gn. M.		Mar. 30, 1888	2805	do.	1♀	21966	
Off Cocos Island	5 32 45	86 54 30	66	rky.	58.4	Feb. 28, 1891	3368	do.	1♀	20599	Figured cotype of *hassleri.*
	Lat. S.										
Galapagos Islands: Off Charles Island.	1 17 00	90 31 30	78.5	gy. S. fne. G.		Apr. 9, 1888	2816	do.	1♀	21967	

Variation.—Varies much in number and prominence of tubercles and teeth and in constriction and ornamentation of rostrum; the elevations of the carapace may be spines or tubercles.

Range.—From the latitude of New Jersey to Grenada. Depth, 10 to 134 fathoms.

Material examined.—See table, pages 520–521.

PARTHENOPE (PLATYLAMBRUS) EXILIPES (Rathbun)

Plates 184 and 185; plate 277, figs. 1 and 2

Lambrus (*Parthenolambrus*) *exilipes* Rathbun, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 234 (type-locality, off San Domingo Point, Lower California, 74 fathoms; holotype, Cat. No. 17365, U.S.N.M.).

Lambrus hassleri Faxon, Bull. Mus. Comp. Zoöl., vol. 24, 1893, p. 152 (type-locality, *Albatross* stations 3368 and 3427, 66 and 80 fathoms; cotypes, Cat. No. 20599, U.S.N.M., and Cat. No. 4481, M.C.Z.); Mem. Mus. Comp. Zoöl., vol. 18, 1895, p. 14, pl. 3, figs. 1, 1*a*.

Diagnosis.—Near *pourtalesii;* carapace broader; branchial regions more expanded and inflated, the inflation extending farther in toward the cardiac area so as to involve the oblique row of small tubercles, which in *pourtalesii* lies low in the fossa between branchial and cardiac regions; interregional depressions shallower; branchial pits deeper; a transversely-oblique line of tubercles across anterior branchial region more conspicuous, spines and teeth of carapace and chelipeds shorter and stouter, those on chelipeds not laciniated to such a degree; anterior margin of carpus and propodus of all the legs finely spinulous or denticulate.

Measurements.—Female (21966), length of carapace 29.7, width of same 40.3, length of cheliped 76.4 mm.

Range.—From west coast of Lower California, Mexico, to Panama and the Galapagos Islands. Depth, 31 to 80 fathoms.

Material examined.—See table, page 523.

PARTHENOPE (PLATYLAMBRUS) DEPRESSIUSCULA (Stimpson)

Plate 188

Lambrus depressiusculus Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 10 1871, p. 101 [128] (type-locality, Manzanillo, Mexico; type not extant).—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 155.

Diagnosis.—Branchial region elongate. A long spine at end of branchial ridge and at lateral angle. No large median tubercle on posterior margin. No spine on rostrum below lateral teeth.

Description.—Body depressed though much less so than in *P. serrata.* Carapace two-fifths broader than long, regions moderately prominent, the cardiac region most so; surface covered with scattered, berried tubercles, irregular in size. Branchial region broadly expanded. Lateral margin armed with 14 or 15 spiniform, granulated teeth; two of these are in front of the cervical suture, and five on the post-lateral margin; of the latter, the second is the longest of all, recurved, and is at the end of the branchial ridge. The spine at the lateral angle, at the widest part of the carapace, is a little longer than those on either side of it. Intestinal region broad, projecting but little beyond line of postero-lateral angles; it is bordered by seven tubercles, of which the end ones are the largest and the two either side of the median one next in size. Frontal region concave; rostrum small, triangular or trilobate, horizontal. Subhepatic and pterygostomian regions moderately guttered. Upper surface of merus of cheliped armed with a row of about five unequal tubercles; margins of merus and manus armed with numerous spiniform teeth, of which there are 10 or 11 on outer margin of hand; teeth granulated like those of carapace but not ramose; beneath, the hands are ornamented with longitudinal rows of small, smooth tubercles, largest along inner edge and fading out toward exterior margin. Legs slightly compressed, not cristate, smooth and unarmed; last two and a half joints furred. A small, slender spine on penult joint of male abdomen; female abdomen furred.

Measurements.—Male, holotype, length of carapace 21.6, width including spines 29.2, length of hand 28.7 (Stimpson). Female ovigerous (17866), length of carapace 26.4, width including spines 35.2, length of hand 28.8 mm.

Range.—Manzanillo, Mexico; Panama.

Material examined.—Panama; purchased of Henry A. Ward; 2 females (1 ovigerous) (17866).

PARTHENOPE (PLATYLAMBRUS) GUERINI (Brito Capello)

Plate 190, fig. 1; plate 191; plate 278, fig. 4

Lambrus crenatus White, List Crust. Brit. Mus., 1847, p. 12 (type-locality, West Indies; type, Cat. No. 45.7*a*, Brit. Mus.); *nomen nudum.*

Lambrus Guérini Brito Capello, Jorn. Sci. Math. Phys. e Nat. de Lisboa, vol. 3, 1871, p. 264, pl. 3, fig. 5 (type-locality, Ilha Mauricia; type in Mus. Nac. Lisbon).—Moreira, Arch. Mus. Nac. Rio de Janeiro, vol. 11, 1901, p. 61 (State of S. Paulo and Rio de Janeiro).

Lambrus guérinii var.? Miers, *Challenger* Rept., Zool., vol. 17, 1886, p. 96.

Diagnosis.—Analogous to *P. depressiuscula.* Body thicker, and narrower, two-sevenths broader than long, depressions deeper-anterior part of branchial elevation high, prominent, forming a semi, detached nodule. Tubercles of carapace and chelipeds coarser than in *depressiuscula* and marginal teeth stouter and shorter, more lobiform than spiniform. While the arrangement of tubercles is almost identical, there is a row of tubercles and granules in front of the posterior margin, which is almost wholly absent from *depressiuscula.* The posterior margin is a little more arcuate, and the large tubercle at either end is very much larger than the intermediate tubercles. Front wider, more inclined and distinctly trilobed. Basal half of fingers with more numerous fine granules.

Measurements.—Female (Ilha Victoria), length of carapace 31.3, width of same 40.4, length of hand 30.3 mm.

Range.—West Indies and Bahia (Miers) to State of São Paulo, Brazil; Mauritius.

Material examined.—

Ilha Victoria, São Paulo, Brazil; Fr. Günther, collector; 1 female (55783).

Ubatuba, São Paulo, Brazil; E. Garbe, collector; 1 female, lent by Mus. Paulista (Cat. No. 331).

PARTHENOPE (PLATYLAMBRUS) FRATERCULUS (Stimpson)

Plates 186 and 187; plate 190, fig. 2

Lambrus fraterculus Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 130 (type-localities, off Sand Key, off Carysfort Reef, West of Tortugas, off Conch Reef, 26 to 68 fathoms; types not extant).

Diagnosis.—Carapace subtriangular. Rostrum ending in a long, narrow tooth. A slender spine outside of and below lateral tooth of front. Merus joints of ambulatories with denticulated margins; dactyli furred.

Description.—Carapace subtriangular, approximately four-sided, the postero-lateral margins continuous with the two sides of the posterior margin, and the long, antero-lateral margins in line with the rostral borders. Depressions separating branchial from cardiac and hepatic regions deep. A narrow ridge connects cardiac and gastric regions and a wider ridge the branchial and hepatic regions, below which ridge there is a deep hollow, visible in side view. Prominences ornamented with a few large tubercles and spines, as follows: Three gastric in a triangle, the posterior the larger, one genital, two cardiac, the anterior the larger, three on branchial ridge, the posterior the longest. Front inclined about 45 degrees, ending in a narrow, blunt tooth, and on each side above the antennules a blunt tooth, outside and below which there is a small slender spine. A tubercle on each preorbital lobe. A large submarginal tubercle on subhepatic region, visible in dorsal view. Margin of branchial region in front of the ridge cut into 9 or 10 small teeth, the second or third from the last being more elongate; behind the ridge 2 or 3 small teeth. Posterior margin with three distant, equal teeth. A small, blunt tooth at inner lower angle of orbit; between it and angle of buccal cavity, a large tubercle. A row of five tubercles near outer margin of endognath.

Chelipeds of male about two and a half times as long as carapace, rather slender, especially as to merus; inner, outer and upper margins of merus armed with a few, very unequal, stout spines; outer and inner margins of manus armed with triangular, denticulated and very unequal teeth, of which there are six or seven larger ones on inner margin and three or four on outer margin; on upper surface the largest tubercle is a large conical one at proximal third. Legs with merus joints denticulated and dactyli furred except at tip; carpus-propodus of last pair with two or three lobes above and five denticles below.

Sternum and abdomen tuberculate, a large, transverse tubercle on each abdominal segment from second to sixth inclusive.

Variations.—Great variation in quality of spines and tubercles, regardless of sex; in some specimens, the prominences are low and blunt, in others high and sharp; in some, the margins of frontal lobes and of orbit are denticulate, in others they are entire or subentire. The amount of inclination of front is also variable.

Color.—Uniform brick red; eggs bright red (Henderson).

Measurements.—Male (9631), length of carapace 16.2, width of same 16.8; female (15177), length of carapace 16.3, width of same 18.3 mm.

Range.—Off Cape Fear, North Carolina; Gulf of Mexico along coast of Florida, eastward to Miami and westward to Yucatan, Mexico; Barbados. Depth, 4 to 90 fathoms.

Material examined.—See table, page 527.

Material examined of Parthenope (Platylambrus) fraterculus

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.
	Latitude N.	Longitude W.								
	° ′ ″	° ′ ″			°F					
North Carolina: Off Cape Fear	33 20 00	77 05 00	90	gy. S	65.8	Apr. 2, 1885	2418	*Albatross*	2♂ 4 y	15182.
Florida:										
South of Cape San Blas	29 18 15	85 32 00	25	crs.gy. S. brk.Sh.		Feb. 7, 1885	2370	do	1♂ 1♀ 1 y	15178.
Do	29 15 30	85 29 30	27	G		do	2372	do	1♂ 1♀	15179.
Do	29 14 00	85 29 15	25	Co		do	2373	do	2♂ 1♀ 1 y	9621.
Do	29 11 30	85 29 00	26	S. G. brk. Sh		do	2374	do	2♂ 4 y	9631.
South of Cape St. George	28 45 00	85 02 00	30	gy. S. brk. Co		Mar. 15, 1885	2405	do	1♀	49152.
South of St. George Sound	28 46 00	84 49 00	26	crs. S. Co		do	2406	do	2♂ 1♀	15180.
Do	28 47 30	84 37 00	24	Co. brk. Sh		do	2407	do	1♂	15181.
Southwest of Charlotte Harbor.	26 19 00	83 11 00	27	S. Algae	68	Mar. 21, 1889	5108	*Grampus*	1♂	15331.
Do	26 13 00	83 44 00	51	wh. S	69	Mar. 18, 1889	5104	do	1♀ y	15330.
Northwest of Dry Tortugas	25 40 00	83 32 00	38	fne. S. Sh	68.5	Mar. 11, 1889	5089	do	1♀	15329.
Do	25 34 00	83 07 00	30	fne. S. bk. Sp	68.5	Mar. 1, 1889	5078	do	1♂	15328.
Do	25 02 00	83 31 00	37	Sh. S. Co. Algae	69.5	Feb. 17, 1889	5057	do	1♂	15214.
Off Dry Tortugas			4					J. B. Henderson	1♂	48903.
Do			16					do	1♀	48901.
Off Key West	Sand Key Light bearing NNW., Key West Light bearing N.		60			June 19, 1893	24	State Univ. Iowa Exped.	3♂	Mus. S. U. I.
Do	Nearly as above		60			do	26	do	1♂	Do.
Do	24 25 45	81 46 00	45	Co	75	Jan. 15, 1885	2318	*Albatross*	1♀	15175.
Off Sand Key			40			May, 1913		J. B. Henderson	1♀ ovig	46043.
Straits of Florida	25 05 00	80 15 00	56	Co. S		Apr. 9, 1886	2640	*Albatross*	1 y	11413.
Off Miami			30			May 12		J. B. Henderson	1♂	48904.
Do			30					do	2♀	48899.
Mexico:										
Off Cape Catoche, Yucatan	22 08 30	86 49 00	26	wh. Co		Jan. 30, 1885	2360	*Albatross*	1♀	15176.
Do	22 07 30	87 06 00	21	wh. R. Co		do	2363	do	1♀	15177.
Barbados:										
Off Lazaretto			20	rough		June 6, 1918	87	Univ. Iowa Barbados-Antigua Exped.	1♂	Mus. S. U. I.

Subgenus PSEUDOLAMBRUS Paulson

Pseudolambrus PAULSON, Investig. Crust. Red Sea, vol. 1, 1875, p. 9; type, *P. calappoides* (Adams and White).

Parthenolambrus A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 148; type, *P. tarpeius* (Adams and White).

Parthenopoides MIERS, Journ. Linn. Soc. London, Zool., vol. 14, 1879, p. 672; type, *P. massena* (Roux).

Carapace semielliptical or semicircular, with a nearly straight posterior margin, the postero-lateral angles being strongly produced. Chelipeds of no great length, never sharply serrate, and with the arms and hands indefinitely contorted. Rostrum more or less deflexed. (Alcock.)

PARTHENOPE (PSEUDOLAMBRUS) TRIANGULA (Stimpson)

Plate 278, figs. 1–3

Lambrus triangulus STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 201 (type-locality, Cape St. Lucas; type not extant).—A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 152, pl. 31, figs. 1–1*c*.

Diagnosis.—Antero-lateral margins oblique and nearly straight, without an angle. Base of movable part of antenna protected by an over-arching tooth on each side, one on orbit, the other on epistome. Upper margins of palm 8- or 9-toothed.

Description.—Carapace an equilateral triangle, posterior margin nearly straight and scarcely exceeding antero-lateral sides in length; this results from the strong projection of the dentated posterior corners of the branchial regions which almost conceal the ambulatory feet. Antero-lateral margin with about 12 very small granulated teeth of which 3 are on the small rounded hepatic region. Surface ornamented with conical tubercles variable in number and size. Rostrum prominent, obtuse, triangular. Base of movable part of external antennae protected on each side by an over-arching tooth, one arising from the lower margin of the orbit, the other from anterior corner of epistome. Ischium of outer maxillipeds granulated, merus tuberculated. Chelipeds rather short, strongly angular and dentated; hand granulated below, but nearly smooth above between the crests, which are high and unevenly 8- or 9-toothed; teeth denticulated, middle one largest. Legs smooth and glabrous; dactyli pubescent. (After Stimpson.)

Measurements.—Female, holotype, length of carapace 14, width of same 17.5 mm.

Record of locality.—Cape St. Lucas, Lower California, Mexico; John Xantus, collector; type not extant.

PARTHENOPE (PSEUDOLAMBRUS) EXCAVATA (Stimpson)

Plate 189

Lambrus excavatus Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 10 1871, p. 98 [125] (type-locality, Manzanillo, Mexico; type not extant).—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 154.

Diagnosis.—Antero-lateral margins angled, the outer part parallel with axis of body. Five deep depressions on anterior half of body. Chelipeds deeply concave above, upper margins of palm 4- and 6-toothed.

Description.—Carapace irregularly hexagonal, broader than long; antero-lateral margin concave, forming an angle with outer lateral margin which is nearly straight and parallel with axis of body and terminates posteriorly in a strongly projecting angle; postero-lateral margins slightly concave, forming a very obtuse angle with each other on account of the little projection of the intestinal region; periphery armed with teeth which are short, triangular, and regularly approximated on the antero-lateral and outer lateral margins but are longer, more spiniform and irregularly arranged on the postero-lateral margins. On the upper surface, besides the usual depression between cardiac and branchial regions there are four deep excavations in front of the latter region, two separating it from the hepatic and two from the gastric region; also a deep concavity on the frontal region, which is continued posteriorly for a short distance on the gastric region. Rostrum large, regularly triangular, deflexed to a right angle with general level of gastric region; margin unarmed or only obscurely toothed. Surface of protuberant parts of carapace covered with low, granulated tubercles. A row of three flat, triangular spines on ventral surface behind cheliped.

Chelipeds much shorter and stouter than in typical *Parthenope*, deeply concave above, concavity smooth or nearly so, and defined by prominent marginal crests, which, except on carpus, are strongly toothed; merus particularly short, anterior crest armed with three or four teeth, superior crest with only two large teeth, the outer much the largest; crest of superior margin of hand armed with six unequal approximated, triangular teeth, that of outer margin with two conical distant teeth besides the knob at each extremity, lower surface ornamented with four or five rows of granulated tubercles, those of middle row largest and most conspicuous; inner margin serrated with granulated teeth. Feet much compressed, crested above, margins dentate, dactyli furred. Each segment of female abdomen armed with short, setose, granulated tubercles, there being on segments two to six, a larger ridge-like tubercle in middle and four or five small ones on each side. (After Stimpson.)

Measurements.—Female (3270), length of carapace 32.4, width of same 39.2, length of right arm 18.4, length of propodus of right cheliped 31.3 mm.

Range.—Manzanillo, Mexico, to Panama.

Material examined.—Panama; Capt. John M. Dow, collector; 1 female (3270).

TUTANKHAMEN, new genus

Type.—*Mesorhoea cristatipes* A. Milne Edwards.

Diagnosis.—Having the dorsal aspect of *Parthenope*, but resembling *Mesorhoea* in its deep afferent channels. The channels, however, differ markedly from those of *Mesorhoea* in being shorter and deeper, bordered above by a laminar expansion of the hepatic and anterior branchial margins, below by a parallel lamina having an emargination near the beginning of the branchial regions; the canals terminate in a cul-de-sac behind the orbit and open on the epistome by a fissure between the external angle of the thin lamina which forms the anterior edge of the buccal cavity and a sort of promonotory formed by the infero-internal angle of the orbit. Epistome spacious and very concave, separated by a thin ridge and a considerable interval from the antennules.

Merus of maxilliped without the antero-internal angle produced forward in a point, as in *Mesorhoea*, or emarginated for the insertion of the palpus as in *Parthenope*.

This genus, typified by the so-called *Mesorhoea cristatipes*, has no obvious resemblance to the true Mesorhoeas, which are *Solenolambrus*-like in dorsal view and were placed in that genus by A. Milne Edwards. The new genus is created at the suggestion of Prof. Bouvier, from whose detailed description of the ventral surface the above diagnosis is abstracted.

TUTANKHAMEN CRISTATIPES (A. Milne Edwards)

Plate 277, figs. 3–5

Mesorhoea cristatipes A. Milne Edwards, Crust. Rég. Mex., 1880, p. 352, pl. 31A, figs. 6–6*c* (type-locality, St. Vincent, 124 fathoms; type in Paris Mus.); Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 5.—A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 359, pl. 10, fig. 3.

Lambrus cristatipes Rathbun, Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 261.

Diagnosis.—Carapace subtriangular. Rostrum large, deeply trilobed. Lateral teeth small. Legs unarmed.

Description.—Carapace smooth, outline almost triangular; gastric and cardiac regions very high forming a median elevation; three tubercles, one posterior and median, the others anterior and lateral, ornament the gastric region; two obtuse, median elevations on cardiac region; branchial regions very swollen, bordered outwardly by a sharp crest which extends to the lateral angle. Front trilobed, medially much produced. Antero-lateral margins cut into many small teeth furnished with short hairs. Chelipeds long and strong; the arm has on its posterior border two or three large tubercles which are compressed and clothed with hair, and on its anterior border a sharp denticulated crest. The inner border of the hand bears a dentate crest, outer border sharp and cut into four large and well separated teeth. Two crests on upper border of movable finger. Fingers touching only at the tips, widely gaping. Legs entire, merus cristate above and below, carpus and propodus above.

Measurements.—Male, holotype, length of carapace 14, width of same 17, total width of crab with arms extended 74 mm.

Range.—Pourtales Plateau, Florida Straits; St. Vincent, Windward Islands. Depth, 124 to 200 fathoms.

Material examined.—Pourtales Plateau; lat. 24° 16′ N.; long. 81° 22′ W.; about 200 fathoms; June 27, 1893; station 56, State University of Iowa Expedition; 1 specimen (Mus. S. U. I.).

Genus THYROLAMBRUS Rathbun

Thyrolambrus RATHBUN, Proc. U. S. Nat. Mus., vol. 17, Mar. 30, 1894, advance sheet, p. 1; July, 1894, p. 83; type, *T. astroides* Rathbun.

Parthenomerus ALCOCK, Journ. Asiat. Soc. Bengal, vol. 64, 1895, p. 280; type, *P. efflorescens* Alcock.

Carapace broader than long, deeply eroded. Frontal and antero-lateral regions strongly deflexed. Surface covered with irregular pits. Basal joint of antenna elongate, reaching or nearly reaching level of inferior orbital hiatus. Maxillipeds broad, fitting close together and filling the buccal cavity; ischium subrectangular posteriorly, inner anterior angle produced; merus broader than long, with a slight notch at antero-internal angle in which the first joint of palpus is fitted transversely; remainder of palpus concealed by merus. Chelipeds of moderate length; manus less stout than merus and armed on inner side with two rows of spines or long tubercles which are continued on the fingers.

West coast of Mexico; off Havana; Indian Ocean; East Indian Archipelago; Australia.

KEY TO THE AMERICAN SPECIES OF THE GENUS THYROLAMBRUS

A¹. Reticulation of surface very rough, frost-like. Chelae slender, armed with two rows of long spines .... **astroides**, p. 532.

A². Reticulation of surface nearly smooth. Chelae stout, armed with two rows of short spines or pointed teeth .... **erosus**, p. 533.

Analogous species on opposite sides of the continent: *astroides* (Atlantic); *erosus* (Pacific).

THYROLAMBRUS ASTROIDES Rathbun

Plate 196; plate 280, figs. 5 and 6

Thyrolambrus astroides RATHBUN, Proc. U. S. Nat. Mus., vol. 17, Mar. 30, 1894, advance sheet, p. 1; July, 1894, p. 83 (type-locality, off Havana, Cuba, 67 and 189 fathoms; holotype, Cat. No. 9507, U.S.N.M.).

Thryolambrus [by error] *astroides* NUTTING, Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 3, 1895, p. 77, plate facing p. 76, fig. 2 (male).

Parthenope (*Parthenomerus*) *efflorescens* ALCOCK, Journ. Asiat. Soc. Bengal, vol. 64, 1895, p. 281 (type-locality, Andaman Sea, 36 fathoms; type in Indian Mus.).

Parthenope efflorescens ALCOCK, Illus. Zool. *Investigator*, Crust., pt. 4, 1896, pl. 22, figs. 5, 5*a* (female).

Diagnosis.—Reticulation of surface very rough, frost-like. Postero-lateral margins meeting posterior margin at an oblique angle; teeth acute. Chelae armed on the inner side with two rows of long spines. Hand slender; fingers slender, of subequal length.

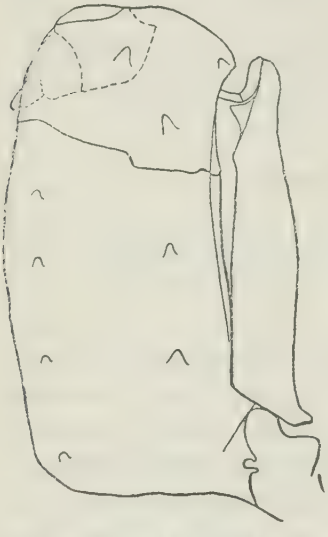

FIG. 147.—THYROLAMBRUS ASTROIDES (9515), MAXILLIPED, × 12

Description.—Entire surface covered with a lace-work or frosting, formed by the partial contact of very delicate crisply paxilliform granules (Alcock). Carapace about two-thirds as long as wide, thick, slightly wider at postero-lateral than at antero-lateral angles; frontal and antero-lateral regions almost perpendicular; posterior margin making a very oblique angle with postero-lateral margin. Besides the large pits everywhere present, there are other, larger depressions; a deep hollow between orbits is continued backward by a shallow sulcus on the mesogastric region; a deep depression at inner branchial angle; cardiac elevation small and nearly isolated; a deep linear furrow in front of posterior margin; hepatic region small and well defined. The granular ridges between pits are raised at intervals into small, acute tubercles.

Rostrum arcuate in dorsal view, produced downward at the middle in a small, triangular, denticulate tooth which is prolonged backward to the interantennular septum. Orbits small, circular; eye-stalks covered with stellar granules and with a row of three or four spinules on the upper side next the cornea. Subhepatic region laterally produced in a triangular tooth. Antero-lateral margin of branchial region armed with seven or eight small, granulated teeth, each with a median ridge, postero-lateral margin with three shallower, more distant teeth. Antero-internal angle of basal antennal joint barely

Material examined of Thyrolambrus astroides

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
Off Havana, Cuba	23° 10′ 42″	82° 18′ 24″	67	wh. Co.		Jan. 19, 1885	2334	*Albatross*	2 ♀	9507	1 is holotype.
Do	23° 10′ 40″	82° 20′ 15″	189	Co		do	2338	do	1 ♂	9515	
Do	23° 10′ 36″	82° 20′ 28″	146	Co		Apr. 30, 1884	2161	do	1 ♀	49018	
Do	Morro Castle bearing SW. by W., about 2½ miles.		110			May 24, 1893		State Univ. Iowa Exped.	1 ♂	Mus. S. U. I.	
Do	Nearly as above		200			May 26, 1893		do	1 ♂	do	
Mauritius									1 ♂	18160	Purchased of Henry A. Ward.

touching front. Endognath with a longitudinal row of three spinules, two on ischium, one on merus. Sternum armed with a downward-pointing spine at base of chelipeds, and in male is deeply hollowed in front of abdomen. Arm very stout in proximal two-thirds, and armed with a few acicular teeth on anterior and upper surfaces; of these, two or three are on the lower-inner and on the upper-inner border. Three teeth on inner margin of carpus. Spines of propodus and dactylus number five or six in lower and six or seven in upper series; they are curved inward and directed distad. Fingers slender, curved inward, tips prolonged in sharp spines; prehensile edges armed with small, sharp, unequal teeth. Legs very rough, margins dentate; dactyli armed with outstanding lobes and spines.

Measurements.—Female, holotype, length of carapace 16, width of same 23.5, length of cheliped about 32 mm. Male (9515), length of carapace 14, width of same 20, length of cheliped about 34 mm.

Range.—Off Havana, Cuba; Mauritius; Andaman Sea. 36 to 200 fathoms.

Material examined.—See table, page 533.

THYROLAMBRUS EROSUS Rathbun

Plate 197; plate 281, fig. 2

Thyrolambrus erosus Rathbun, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 579, pl. 42, fig. 1 (type-locality, off Cape St. Lucas, 31 fathoms; holotype, Cat. No. 21577, U.S.N.M.).

Diagnosis.—Reticulation of surface nearly smooth. Postero-lateral margins nearly transverse; teeth rounded or lobiform. Chelae armed on the inner side with two rows of short spines or pointed teeth. Hand short and stout; fingers stout, dactylus much the longer.

Description.—Near *astroides;* carapace longer, outline more pentagonal; lateral and posterior margins, instead of thin and acutely dentate, are thick, the postero-lateral margin nearly transverse and furnished with seven unequal lobes; antero-lateral angle more strongly marked, margin sub-entire; hepatic region more prominent. Reticulating ridges of surface smooth; instead of prominent, acute tubercles at intervals, there are rounded tubercles covered with depressed granules. Antero-internal angle of basal antennal joint not reaching front. A row of six or seven acute tubercles on endognath, the posterior tubercle much the largest. No large spine on sternum at base of cheliped. Protuberances of chelipeds rounded lobes or tubercles, except those of dactylus. Arm shorter and less thigh-shaped than in *astroides;* the largest tubercles are the one near distal end of outer-upper border, and one near proximal end of inner-lower border. Of the tubercles on the manus, the middle one of the upper row is by far the largest. Fingers shorter than in *astroides,* gaping in larger cheliped; dactylus armed with three or four small spines or sharp-pointed tubercles on inner surface. Lower border of propodus armed with six triangular, acute teeth. Legs with surface little rough save on dactylus; marginal prominences either lobes or tubercles except on lower edge of propodus and on dactylus where they are sharp denticles.

Measurements.—Female, holotype, length of carapace 18.4, width of same 25, length of cheliped 27 mm. Male (21577), length of carapace 17.9, width of same 24.7, length of cheliped 39.3 mm.

Range.—West coast of Mexico: Southern part of Gulf of California and off Cape St. Lucas. Depth, 8 to 31 fathoms.

Material examined.—See table, page 535.

Genus SOLENOLAMBRUS Stimpson

Solenolambrus Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 132; type, *S. typicus* Stimpson.

Pisolambrus A. Milne Edwards, Crust. Rég. Mex., 1878, p. 157; type, *P. nitidus* A. Milne Edwards.

Carapace pentagonal, more or less broader than long; posterior side of pentagon much the shortest, the other four sides about equal. Margin acute on all sides, forming a slight crest. The upper surface is naked, glossy, strongly convex, and bears four protuberances—one gastric, one cardiac, and two branchial. Gastric and cardiac protuberances more or less triangularly pyramidal; branchial protuberance armed with an acute ridge running obliquely to postero-lateral

Material examined of Thyrolambrus erosus

Locality	Bearings						Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.			Longitude W.											
	°	′	″	°	′	″			°F						
Mexico:															
Gulf of California	21	22	30	110	19	30	8	brk. Sh.		Apr. 30, 1888	2824	*Albatross*	1 ♀	21961	
Do	24	11	30	109	55	00	10	Sh		do	2828	do	1 ♀	21965	
Off Cape St. Lucas	22	52	00	109	55	00	31	rky	74.1	May 1, 1888	2829	do	2 ♂ 2 ♀	21577	1 female is holotype.

Material examined of Solenolambrus typicus

Locality	Bearings						Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.
	Latitude N.			Longitude W.										
	°	′	″	°	′	″			°F					
Bahamas: Little Bahama Bank	27	22	00	78	07	30	338	gy. S	47.5	May 2, 1886	2655	*Albatross*	1 ♂	11381.
Florida:														
Off Fowey							75–100			May —, 1917	361	*Eolis;* J. B. Henderson.	1 ♂	50937.
Ajax Reef							70–90				370	do	1 ♂	50938.
Off Sand Key	Sand Key Light bearing NW. by N., Key West Light, N. ¾ E.						50–60			June 19, 1893	27	State Univ. Iowa Exped.	1 ♂	Mus. S. U. I.
Off Key West	Key West Light bearing NW. by N., Sand Key Light, W. by N.						(1)			June 26, 1893	47	do	1 ♂	18677.
Do							100–125					J. B. Henderson	2 ♂	50388.
Gulf Stream, S. of Key West, near edge of Pourtales Plateau.								co. Fragments				do	1 ♂	48885.
Western Dry Rocks							110					do	1 ovig. ♀	50389.
Cuba:														
Off Santiago de Cuba	19	56	44	75	50	49	202	hrd. crs. S		Feb. 27, 1884	2131	*Albatross*	1 ♂	7805.
Do	19	55	55	75	48	03	290	wh. S. brk. Sh		do	2133	do	1 ♂	18438.

---

[1] About 80 fathoms.

margin of carapace. Frontal region slightly convex, no protuberance on orbital region. Rostrum short and blunt or faintly tridentate. Orbits round, a closed fissure above. Basal joint of external antennae about as long as next joint. Epistome concave. From the antero-external angle of the buccal area a sharp, elevated, crenulated ridge extends to outer base of cheliped, separating concave pterygostomian from subhepatic region, which is also concave and channel-like. When retracted, the extremity of hand of cheliped covers pterygostomian region, forming the afferent passage. External maxillipeds fit accurately the buccal area and closely against each other within; exognath concave, forming part of wall of afferent channel, which is defined within by a slight, elevated ridge on outer side of ischium of endognath; the merus has a prominent antero-external angle, its surface concave toward antero-interior angle; no notch for insertion of palpus, which, except at origin, is concealed behind the other joints of endognath. The chelipeds resemble those of *Parthenope,* except that the fingers are very small and the dactylus is generally at right angles with palm when retracted. Terminal joints of ambulatory legs acuminate. Third, fourth, and fifth joints of male abdomen soldered together.

American coasts, from Gulf of Mexico and the Bahamas to Barbados, and at Panama.

KEY TO THE SPECIES OF THE GENUS SOLENOLAMBRUS

- A^1. Some teeth or spines on posterior or postero-lateral margins. Dorsal protuberances angular.
  - B^1. Not more than four teeth on posterior and postero-lateral margins.
    - C^1. Tubercles on surfaces of hand between crests. Dactylus oblique to palm. Sternum between chelipeds with several tubercles. **typicus**, p. 537.
    - C^2. Surfaces of hand smooth between crests. Dactylus at right angles with palm. Sternum between chelipeds without tubercles.-**arcuatus**, p.538.
  - B^2. Six teeth or spines on posterior or postero-lateral margins.
    - C^1. Six minute teeth on posterior and postero-lateral margins. No median spines. No spine near middle of branchial ridge.-**portoricensis**, p. 539.
    - C^2. Six spines on posterior and postero-lateral margins. Two median spines. A spine near middle of branchial ridge--------**decemspinosus**, p. 540.
- A^2. No spines or teeth on posterior or postero-lateral margins. Dorsal protuberances rounded--------------------------------**tenellus**, p. 541.

Analogous species on opposite sides of the continent: *typicus* (Atlantic); *arcuatus* (Pacific).

SOLENOLAMBRUS TYPICUS Stimpson

Plates 192 and 193; plate 279, figs. 1–4

Solenolambrus typicus Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 133 (type-localities, off the Samboes and off Alligator Reef, 80 to 110 fathoms; types not extant).—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 159; 1879, pl. 28, figs. 4–4*d*.—Rathbun, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 81 (part; not specimens from Porto Rico).

Diagnosis.—Not more than four teeth on posterior and postero-lateral margins. Two acute elevations on median line. An obtuse angle at middle of branchial ridge. Three (or two and a half) rows of moderate-sized tubercles on lower surface of palm and two rows on outer surface; margins dentate. Chelipeds two and a half times as long as carapace.

Description.—Carapace one-ninth broader than long. Surface coarsely punctate. Protuberances of gastric and cardiac regions triangularly pyramidal and acute, with the ridges forming the angles crenulated; the posterior ridge in the median line of carapace, the other two diverge from each other in front. Cardiac pyramid symmetrical, each of its triangular sides being equal; gastric protuberance not symmetrical, the posterior ridge being a short, steep slope, the two anterior ridges being long and inclosing a gradual, somewhat convex, slope toward front. Ridge of branchial region also crenulated and bent at middle at an obtuse angle, almost a right angle. In the male each protuberance of carapace is surmounted by an acute spine, while in the female the apical angles are not thus acute. Margin of carapace more or less distinctly crenulated, especially antero-lateral margin, at the outer or posterior end of which are three small and not very well-marked teeth. Antero-lateral margin concave anteriorly, convex posteriorly. Posterior margin straight, lateral angles sharply defined and even dentiform or spiniform. Eyes rather large, with a minute tubercle on anterior side of extremity. Basal joint of external antennae somewhat longer than next joint. Epistome of moderate length. External maxillipeds naked; ischium tuberculated near outer margin and near extremity. Sternum with a few tubercles between bases of chelipeds.

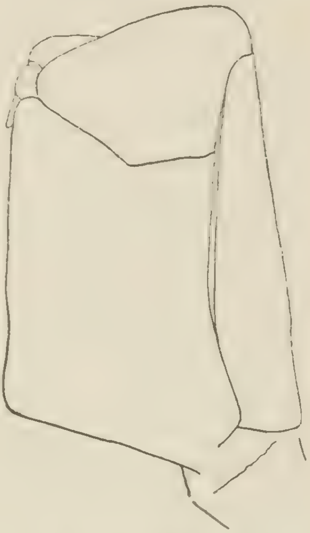

Fig. 148.—Solenolambrus typicus (50388), maxilliped, × 17.7

Chelipeds long, naked, except some inconspicuous setae on crest of hand. Merus with denticulated margins and with surface above for the most part smooth and glossy, but with a few tubercles near margins. Carpus with five denticulated crests, Hand trigonous, with 10 strong teeth on inner crest, 12 to 14 small granulated teeth on outer margin, and 15 teeth increasing regularly in size toward extremity on lower margin; upper surface with 2 rows of tubercles, inner surface with 2 rows, and outer surface with 3 rows; all the tubercles ornamented with from 2 to 5 granules. Fingers very small, between a fourth and a fifth the length of palm; dactylus when flexed almost at right angles with palm. Ambulatory legs compressed, naked, polished, with a laminiform crest above; the merus joints of posterior pair have a crest below, which has a lobe-like expansion at inner extremity. Abdomen tuberculated at sides, that of male tapering slightly.

Measurements.—Male (18677), length of carapace 10.8, width of same 11.6, length of cheliped 26 mm.

Variations.—The two projections at ends of posterior margin vary from very short, inconspicuous teeth to prominent teeth and even spines, according to Stimpson. This is not dependent on sex, as Stimpson thought, or on size; for in the museum collection there are nine male specimens, of which three large ones have shallow teeth, three small ones have well developed teeth, while the strongest teeth occur on three specimens of different sizes, one small, one large and one intermediate. In the single female the teeth are less evident than in any of the males. The chelipeds show different degrees of roughness; the merus may have an almost smooth upper surface with only a line of granules near posterior edge, or the posterior half of that surface may be pretty well covered with granulation. The rougher specimens also show longer marginal teeth on the hand, especially noticeable on the upper crest where the larger teeth may be as long as wide and separated by sinuses which are rounded at base instead of pointed.

Range.—Bahama Banks, southern Florida, Gulf of Mexico, and Caribbean Sea. Depth, 50 to 338 fathoms.

Material examined.—See table, page 535.

SOLENOLAMBRUS ARCUATUS Stimpson

Solenolambrus arcuatus Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 10, 1871, p. 101 [128] (type-locality, Panama; type not extant).

? *Solenolambrus typicus* Cano, Boll. Soc. Nat. Napoli, ser. 1, vol. 3, 1889, p. 187, Panama; not *S. typicus* Stimpson, 1871.

Diagnosis.—Not more than four teeth on posterior and posterolateral margins. Two acute elevations on median line. A large toothlet at middle of branchial ridge. Surfaces of hand smooth between crests; dactylus at right angles with palm. Sternum between chelipeds without tubercles.

Description.—Carapace short and broad, with projecting lateral angles. Surface punctate, much more finely than in *typicus*. Antero-lateral margins long and convex; the two together would form a regular arc were it not for projection of rostrum; each armed with 11 little projecting, tridenticulate, teeth the middle ones broadest. Postero-lateral margin concave, posterior margin short and slightly convex. Protuberances of carapace like those of *typicus*, but stronger; their ridges crenulated; gastric and cardiac protuberances very tall, with strongly projecting apices, which are almost spiniform but not acuminate; ridge of branchial region convex forward and crenulated, with a larger toothlet at middle. Basal article of external antennae shorter than next article. Eyes very small. Afferent and subhepatic channels very deep, the ridge separating them being prominent and very thin and sharp. No supplementary ridge on subhepatic region. External maxillipeds with hairy margins and with a tubercle near inner summit of ischium; antero-external angle of merus less acute and prominent than in *typicus;* merus with three or four strong tubercles on external oblique ridge. Sternum between chelipeds concave, without tubercles. Chelipeds rather short; merus seven-toothed before and behind; carpus with five denticulated crests; hand with nine strong, subspiniform teeth on superior crest, and the same number of tuberculiform teeth on outer and inner edge of lower surface; on the inner edge the teeth are minute toward the base, but are large on outer half of hand; surface of hand between toothed crests smooth; inferior surface, and interstices of teeth of all three crests pubescent; hand expanded in width at distal extremity, and dactylus when retracted exactly at right angles with palm. Legs compressed, glabrous; merus joints with acute, sparsely ciliated superior edge; merus of posterior pair obtuse below, without crest. Abdomen smooth. (Stimpson.)

Measurements.—Female, holotype, length of carapace 10.2, width of same 13.2, length of merus of cheliped 7.9, of hand 9.4 mm.

Range.—Panama (Stimpson, Nobili).

SOLENOLAMBRUS PORTORICENSIS Rathbun

Plate 194, figs. 5 and 6

Solenolambrus typicus RATHBUN, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 81 (part: specimen from Mayaguez Harbor).

Solenolambrus portoricensis RATHBUN, Proc. U. S. Nat. Mus., vol. 64, art. 14, 1924, p. 5 (type-locality, Mayaguez Harbor, Porto Rico, 75 to 76 fathoms; holotype, male, Cat. No. 24237, U.S.N.M.).

Diagnosis.—Six minute teeth on posterior and postero-lateral margins. No spines on median line. On outer and lower surfaces of palm a row of large granulated tubercles parallel to each margin; outer and inner margins tuberculated; dactylus at right angles with palm. Cheliped two and a third times as long as carapace.

Description.—Similar to *typicus.* Carapace wider, one-sixth wider than long; elevations lower; anterior slope of cardiac elevation granulated, its borders not sharply defined; tooth at end of branchial ridge minute; a still smaller and inconspicuous tooth on postero-lateral margin half way between branchial ridge and posterior margin; median gastric area, or anterior slope of gastric elevation narrower than in *typicus;* margin very finely granulate, no teeth at widest part except one at lateral angle. Chelipeds shorter than in *typicus;* chelae hairy especially on upper margin; merus with upper surface widening less toward distal end, a few tubercles near margins as in *typicus,* marginal crenulated teeth less projecting than in *typicus;* manus armed above with 10 teeth almost hidden in hair, the distal tooth and 2 proximal teeth very small; just below is a row of 10 large granulated tubercles; outer and inner margins tuberculated, the outer margin with 12, the inner with 13 tubercles; next to each margin a row of similar tubercles; immovable finger very short; dactylus vertical. Lower border of merus of last three ambulatory legs irregularly denticulate; a small, denticulated lobe near proximal end in second and third pairs, and a denticulated lamina at middle in third pair. The transverse line of tubercles on the sternum, either side of abdomen, at base of chelipeds is more transverse than in *typicus* and is situated further from the tip of the abdominal cavity; there are no tubercles in the middle of the first sternal segment, as in *typicus.*

Measurements.—Male, holotype, length of carapace 7.3, width of same 8.5, length of cheliped 17 mm.

Type-locality.—Mayaguez Harbor, Porto Rico: Point del Algarrobo, E., 2¾ miles; 75 to 76 fathoms; rky. S. Co.; temp. 68.5° F.; January 20, 1899; station 6063, *Fish Hawk;* 1 male, holotype (24237).

SOLENOLAMBRUS DECEMSPINOSUS Rathbun

Plate 194, figs. 1 and 2

Solenolambrus decemspinosus Rathbun, Proc. U. S. Nat. Mus., vol. 17, March 30, 1894, advance sheet, p. 2; July, 1894, p. 84 (type-locality, Gulf of Mexico, lat. 28° 44′ N., long. 85°16′ W., 60 fathoms; holotype, Cat. No. 18157, U.S.N.M.).

Diagnosis.—Six spines on posterior and postero-lateral margins. A second spine on branchial ridge. Two tall spines on median line. On outer and lower surfaces of palm a row of large granulated tubercles parallel to each margin; outer and inner margins tuberculated; dactylus nearly at right angles with palm. Cheliped twice as long as carapace.

Description.—Closely allied to *S. typicus.* Antero-lateral margin convex; area between the two anterior gastric ridges narrower than in *S. typicus;* gastric and cardiac prominences terminating in slender spines. Eight additional dorsal spines—two on each branchial ridge, of which the posterior or marginal is the longer, one at each posterior angle, and one on postero-lateral margin midway between the last and branchial spine. Surface finely punctate. Sternum smooth between bases of chelipeds. Terminal segment of abdomen of male much longer and distally narrower than in *S. typicus*, its sides deeply concave. Merus of the outer maxillipeds narrower and more produced at antero-external angle than in *S. typicus*. Chelipeds similar to those of *S. typicus*. The second, third, and fourth pairs of ambulatory legs more or less cristate below.

Measurements.—Male, holotype, length of carapace 6, width of same 7, length of cheliped 12 mm.

Range.—Gulf of Mexico and Porto Rico. Depth, 45 to 60 fathoms.

Material examined.—

Gulf of Mexico: Off Cape San Blas, Florida; lat. 28° 44′ 00″ N.; long. 85° 16′ 00″ W.; 60 fathoms; gy. S.; March 15, 1885; station 2404, *Albatross;* 1 male, holotype (18157).

Porto Rico: Off entrance to San Juan; Battery on El Boqueron, S. E. ½ E., 7¾ miles; 45 fathoms; S. M.; temp. 77° F.; January 13, 1899; station 6051, *Fish Hawk;* 1 male (24236).

SOLENOLAMBRUS TENELLUS Stimpson

Plate 194, figs. 3 and 4; plate 279, figs. 5–9

Solenolambrus tenellus STIMPSON, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 134 (type-localities, off Carysfort, Conch and French Reefs, 35 to 49 fathoms; types not extant).

Pisolambrus nitidus A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 158, pl. 30, figs. 4–4*e* (type-locality, Barbados, 100 fathoms; cotypes, Cat. No. 2943, M. C. Z.).

Diagnosis.—No spines or teeth on posterior or postero-lateral margins. Dorsal protuberances rounded. Eyes very large. Margins of arm and hand serrated. Chelipeds three times as long as carapace.

Description.—A small, delicate species. Carapace but little broader than long, and about equally produced in front of and behind the line of the lateral angles. Surface rather coarsely punctate. Protuberances of carapace much less prominent than in *typicus;* those of gastric and cardiac regions obtusely rounded, without angular ridges; ridge of branchial region sufficiently well marked near postero-lateral margin, but almost obsolete anteriorly. Margins of carapace crenulated, the teeth being most distinct on the flattened, expanded, and broadly rounded lateral angle, where they are about six in number, not crenulated, and but little projecting, being defined chiefly by the impressed lines on the marginal limb. Two or three denticulated teeth on hepatic region. Postero-lateral margin slightly concave. Posterior margin convex: its lateral angles obtuse. Rostrum rather prominent and faintly tridentate at extremity; median tooth smallest and most prominent. External angle of orbit not prominent. Eye large, with a very minute tubercle at summit. Basal joint of external antennae about as long as next joint. Subhepatic region less concave than in *typicus* and without supplementary ridge. External maxillipeds and afferent channels nearly as in *S. typicus*, but with the ridges less strongly tuberculated and the outer angle of merus less acutely prominent. Sternum between bases of chelipeds convex on either side, and nearly smooth. Chelipeds very long and slender; edges denticulated, surfaces smooth and polished; merus with about 13 denticles on either edge, the third denticle from distal end of anterior edge being larger than the others; hand with 11 or 12 sharp, forward-curving teeth on superior edge, the terminal tooth above finger spiniform and considerably longer than the others; outer edge of hand with 11 to 13 obtuse, less prominent, minutely

Material examined of Solenolambrus tenellus

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
Florida:	° ′ ″	° ′ ″									
Off Cape St. George	28 45 00	85 02 00	30	gy. S. brk. Co.		Mar. 15, 1885	2405	*Albatross*	1 ♂	15169	
Off Key West	Sand Key Light bearing W. NW., Key West Light bearing N.		60			June 19, 1893	24	State Univ. Iowa Exped.	1 ♂ 1 ♀	18678 Mus. S. U. I.	
Do	Sand Key Light bearing NW. by N., Key West Light, N. ½ E.		50–60			do	27	do	1 ovig. ♀	Mus. S. U. I.	
Off Fowey			100			May, 1917	360	*Eolis*; J. B. Henderson	1 y. ♀	50939	
Bahamas						1886		*Albatross*	1 ovig. ♀	17888	
Barbados:											
Off Barbados	Lazaretto bears SE. by E., ½ mile off shore.		35	rky.		May 24, 1918	42	Univ. Iowa Barbados-Antigua Exped.	1 ovig. ♀	Mus. S. U. I.	
Do			80					U. S. C. S. S. *Hassler*	1 ♂	2071, M.C.Z.	
Do			100			Dec. 27–30, 1871		do	7	2943, M.C.Z.	Cotypes of *Pisolambrus nitidus.*

crenulated teeth; inner edge with 18 to 20 very minute teeth. Legs naked, compressed, without laminiform crests; merus of last pair slightly expanded below near base. Abdomen and sternum of male coarsely pitted, otherwise smooth and glabrous. (After Stimpson.)

Measurements.—Male (18678), length of carapace 5.5, width of same 6.3, length of cheliped 16 mm.

Range.—From Gulf of Mexico (west coast of Florida) to Florida Keys, Bahamas, and Barbados. Depth, 30 to 115 fathoms.

Material examined.—See table, page 542.

Genus LEIOLAMBRUS A. Milne Edwards

Leiolambrus A. Milne Edwards, Crust. Rég. Mex., 1878, p. 148; type, *L. punctatissima* (Owen) [*spinosissima*, by error].

Carapace hexagonal, considerably broader than long, with a strong spine near middle of its lateral margin. Surface depressed, smooth, or nearly so, with three low longitudinal elevations, one median, the others branchial. Front subtruncate, with a minute median point. Orbits with a closed fissure above, a large V-shaped fissure below toward outside, and an inner hiatus in which is lodged the antenna. Basal joint of antenna very small. Antennules folding almost longitudinally. Buccal frame narrowing a little forward, loosely covered by external maxillipeds; these last have an anteriorly tapering ischium, a merus with a semicircular antero-external outline, antero-internal angle rectangularly notched; merus and ischium of the endognath bordered with long hairs which form a ventral covering to the afferent channels of the branchiae; exognath concealed above endognath. Chelipeds very long, sharply trigonal, somewhat subequal; marginal teeth small and numerous. The fingers gape in the larger claw. First pair of ambulatory legs the shortest.

Known only from the two species here described.

KEY TO THE SPECIES OF THE GENUS LEIOLAMBRUS

A¹. Carapace with four strong marginal spines behind____**punctatissimus**, p. 543.
A². Carapace with no strong marginal spines behind____________**nitidus**, p. 545.

Analogous species on opposite sides of the continent: *nitidus* (Atlantic); *punctatissimus* (Pacific).

LEIOLAMBRUS PUNCTATISSIMUS (Owen)

Plate 198

Parthenope punctatissima Owen, Zool. of Beechey's Voy., 1839, p. 81, pl. 24, fig. 4 (type-locality, coast of California; type not extant).—Stimpson, Boston Journ. Nat. Hist., vol. 6, 1857, p. 458 [18].

Parthenope (*Lambrus*) *punctatissima* Lockington, Proc. California Acad. Sci., vol. 7, July 17, 1876 (1877), p. 78 [16].

Leiolambrus spinosissima (by error) A. Milne Edwards, Crust. Rég. Mex., 1878, p. 148.

Leiolambrus punctatissima A. Milne Edwards, Crust. Rég. Mex., 1878, p. 159.

Leiolambrus punctatissimus Holmes, Occas. Papers California Acad. Sci., vol. 7, 1900, p. 46.

Diagnosis.—Carapace with four strong marginal spines behind; lateral spine of moderate size. Orbit much narrower than rostrum. Five or six enlarged teeth on anterior margin of arm.

Description.—Carapace smooth, convex, minutely punctate, median gastric and cardiac regions forming a nearly continuous, longitudinal elevation, bounded on either side by a conspicuous, longitudinal depression. Front truncate, but with a small median tooth behind which there is a short, longitudinal groove. Postorbital angle acute. Antero-lateral margins slightly arcuate, and furnished with teeth which become very small toward anterior end. Sides of carapace produced into a prominent, triangular tooth. Two teeth on posterior margin near median line; external to these a pair of larger marginal teeth; margins between teeth of external pair and lateral angles of carapace concave. Posterior and postero-lateral margins marked with a delicate, raised, jagged line; another fine raised line runs upon the branchial region from postero-lateral tooth. Maxillipeds smooth, ischium narrowed distally, antero-internal angle produced forward in a rounded lobe; merus broadly rounded at antero-external angle and produced behind articulation of palp. Chelipeds long, angles denticulated; anterior edge of merus also with several larger denticulated teeth; outer edge of carpus dentate. Immovable finger nearly longitudinal and straight, inner edge dentate; dactyl curved and provided on external portion of base with two converging denticulated ridges which meet not far from tip. Legs smooth, compressed, differing little in length; dactyls lanceolate, flattened in a plane oblique to that of the preceding joints. The transverse elevations of first three segments of abdomen are finely denticulate and are produced at extremities in a tooth. (After Holmes.)

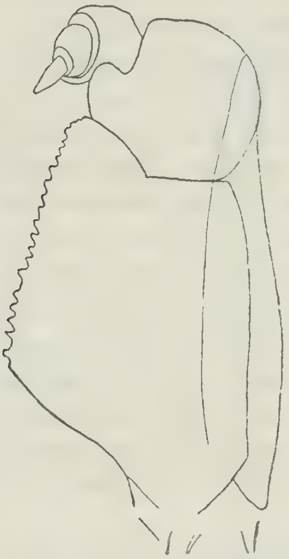

Fig. 149.—Leiolambrus punctatissimus (17366), maxilliped, × 19.2

Measurements.—Male (18180), median length of carapace 13.2, width 18.7, length of cheliped, below, about 40 mm.

Range.—?California; Gulf of California, Mexico. The records for California are indefinite and may refer to Lower California.

Material examined.—

"California": 1 ovigerous female (Copenhagen Mus.).

Off Guaymas, Mexico; lat. 27° 45′ 00″ N.; long. 110° 45′ 00″ W.; 20 fathoms; gn. M.; temp. 65.2° F.; March 31, 1889; station 3037, *Albatross;* 11 males, 3 females, 2 young (17366, 18620).

Off La Paz Bay; lat. 24° 18′ 00″ N.; long. 110° 22′ 00″ W.; 26.5 fathoms; brk. Sh.; April 30, 1888; station 2823, *Albatross;* 1 male (18180).

LEIOLAMBRUS NITIDUS Rathbun

Plate 199; plate 281, fig. 1

Leiolambrus nitidus RATHBUN, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 80, text-fig. 12 (type-locality, Mayaguez Harbor, Porto Rico, 12 to 18 fathoms; (holotype, Cat. No. 23776, U.S.N.M.).

Diagnosis.—Carapace without strong marginal spines behind; lateral spine large, involving half of antero-lateral margin. Orbit nearly as wide as rostrum. Three enlarged and distant spines on anterior margin.

Description.—Carapace about three-fifths as long as broad, antero-lateral and postero-lateral margins subequal; surface coarsely punctate in elevated regions, smooth in depressions, a little granulous along summit of branchial, cardiac, and posterior part of mesogastric. Margin of front feebly tridentate, not advanced beyond antennular fossettes. Orbits wider than long and completely filled with large eyes. Antero-lateral margin obscurely toothed, the teeth having denticulate margins. Lateral spine strong, acuminate, directed either outward or somewhat backward, and slightly upward. A small tubercle, sometimes pointed, on postero-lateral margin at end of branchial ridge. Extremities of posterior margin either angular or marked with a small tooth. Inner lobe of orbital floor produced nearly to line of front. Chelipeds narrow, lower surface smooth, upper surface with a scant marginal fringe of hair. Arm with upper surface convex and scabrous, anterior margin armed with many small denticulated teeth, of which three or four are noticeably larger and sometimes spiniform; posterior margin evenly denticulate and terminating in a spine. Outer margin of wrist denticulate, inner margin granulate, a longitudinal line of granules through middle of upper surface. Hand with denticulate inner and outer margins, with granules along outer margin of upper surface. Thumb not bent down or in, prehensile edge with three or four large teeth. Movable finger spinulous on upper surface; a spine at terminal third directed distally; prehensile edge finely toothed. Fingers of larger claw with a small gape. Last three pairs of ambulatory legs reaching beyond end of arm; first pair barely reaching dactylus of second. Legs almost smooth; lower margins of meral joints very finely denticulate. The

Material examined of Leiolambrus nitidus

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			° C						
Jamaica: Montego Bay			40			Aug. 4, 1910		C. B. Wilson	1♂ 1♀	49228	
Porto Rico:											
San Juan Harbor	NW. angle Morro Castle, ⅜ mile.		4.5-5.5	S. M	25.2	Jan. 16, 1899	6054	*Fish Hawk*	1♂ 2♀	24229	
Mayaguez Harbor	Customhouse, E. by S., 1½ miles.		7.25	stky. M	26	Jan. 19, 1899	6058	do	1♂	24228	
Do	Customhouse, E. by S., 2 miles.		7	stky. M	27	do	6059	do	2♂	24231	
Do	Customhouse, E. by S. ¼ S., 2¼ miles.		12	stky. M	27	do	6060	do	2♂ 1♀	24230	
Do	Black buoy entrance, N. by W. ½ W., ½ mile.		12-18	S. M	26	Jan. 20, 1899	6061	do	3♂ 5♀	23776	1 ♂ is holotype.
Do						do		do	1♂ 1♀	24232	
Porto Rico						1899		do	1♂	24233	

third, fourth, and fifth abdominal segments in the male fused; all separate in the female.

Measurements.—Male, holotype, length of carapace 6.4, width of same 10.3, length of cheliped about 20 mm.

Range.—Jamaica; Porto Rico.

Material examined.—See table, page 546.

Genus MESORHOEA Stimpson

Mesorhoea Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 135; type, *M. sexspinosa* Stimpson [by error, *sexpinosa*].

Resembles *Solenolambrus* in form and armature of carapace, character of feet and of pterygostomian and hepatic channels, except that the latter are deeper. Differs, however, in the efferent channels meeting at the middle of the endostome, which has there a triangular projection, and a deep notch in its vertical, laminiform wall. Merus of external maxillipeds acutely produced forward at internal angle and behind it the palpus is entirely concealed. Epistome very short. Eyes small and capable of retraction into their deep sockets so as to be almost completely hidden. Basal article of external antennae somewhat shorter than next article. (After Stimpson.)

Contains only the two following species.

KEY TO THE SPECIES OF THE GENUS MESORHOEA

A¹. Movable finger vertical, without smooth bead granule. Branchial ridge nearly straight ---------------------------------- **sexspinosa**, p. 547.

A². Movable finger oblique, with smooth bead granule on outer surface. Branchial ridge curved -- **bellii**, p. 548.

Analogous species on opposite sides of the continent: *sexspinosa* (Atlantic); *bellii* (Pacific).

MESORHOEA SEXSPINOSA Stimpson

Plate 200

Mesorhoea sexpinosa Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 136 (type-locality, 4 miles southwest of Loggerhead Key, 11 fathoms; type not extant).

Solenolambrus fastigatus A. Milne Edwards, Crust. Rég. Mex., 1878, p. 163, pl. 29, figs. 5–5*e* (type-locality, Mexico (Gulf of Mexico on plate); type in Paris Mus.).—A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 357.

Mesorhoea sexspinosa A. Milne Edwards, Crust. Rég. Mex., 1878, p. 164.

Solenolambrus typicus Rathbun, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 81 (part: specimen from Punta de Melones).

Diagnosis.—Carapace one-fifth or one-fourth broader than long. Branchial ridge nearly straight. Cardiac spine the most slender. Movable finger vertical, without smooth bead granule. Outer angle of wrist laminate.

Description.—Carapace about equally produced in front and behind, beyond the line of the lateral angles. Surface punctate and inconspicuously pubescent. Protuberances of gastric, cardiac and branchial regions strongly angular, each surmounted by a three-sided spine, the branchial spine being situated on the postero-lateral margin, of which it forms a projection. Angles or ridges more or less crenulated. Lateral edges of gastric protuberance continued forward nearly to front, becoming parallel shortly after diverging from the spine. Cardiac spine more slender than the others, its posterior edge nearly vertical. Branchial ridge nearly straight. Between protuberances and ridges the surface is more or less regularly concave, the sides of the protuberances not being swollen. Rostrum short. Margins of carapace sublaminiform and almost entire, the normal crenulation being indicated only by faint impressed lines; microscopic notches may, however, be detected on antero-lateral margin which is slightly convex toward lateral angle. Postero-lateral margin concave. Posterior margin about half as long as postero-lateral, convex at middle, terminating on either side in a slight tooth. Afferent channels deep, separated from the subhepatic channels by a very thin and sharp, prominent, ciliated lamina, and defined on the inner side by the ciliated outer edge of ischium of outer maxillipeds. From anterior angle of buccal area a short ridge extends to middle of inner tooth of orbit, which ridge separates the concavity of epistome from that of subhepatic region. Merus[58] of maxillipeds with two tubercles, one towards postero-exterior angle, the other close to antero-exterior angle; anterior margin of joint deeply concave or notched.

Chelipeds short, pubescent, especially on the toothed edges; surface between edges smooth; on basal joint below there is a strong, triangular, pyramidal spine nearly as large as dorsal spines of carapace; margins of merus crenulated with six or seven small teeth on either edge; carpus flattened above, with two strong, crenulated crests, the outer one of which bears a larger spiniform tooth at middle; hand with an elevated 9-toothed superior crest and 11-toothed outer margin; fingers very small; dactylus at right angles with palm. Legs much compressed; carpus and propodus with a laminiform crest above; merus and propodus of posterior pair with slight crest below. Abdomen of female glabrous. (Stimpson.)

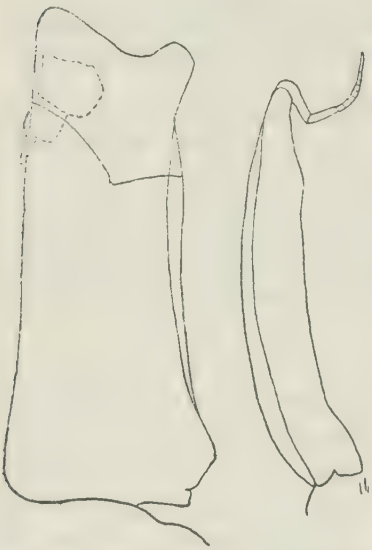

FIG. 150.—MESORHOEA SEXSPINOSA (50456), MAXILLIPED, × 33.8

Measurements.—Female, holotype, length of carapace 8.1, width of same 9.9, length of hand 7.1 mm. Male (49202), length of carapace 6.6, width of same 8.6, length of hand 6.5 mm.

Variation.—This species shows a variation similar to that in *Solenolambrus typicus;* the extremities of the posterior margin may have a distinct tooth as in the young female, or only a slight indication of one as in the larger specimens; the protuberances of the carapace have more slender tips in the young specimen than in the adults.

Range.—West coast of Florida and Florida Keys; Gulf of Mexico (A. Milne Edwards); Porto Rico; Flannegan Passage. Depth, 4¼ to 27 fathoms.

Material examined.—See table, page 549.

MESORHOEA BELLII (A. Milne Edwards)

Plate 201; plate 280, figs. 1–4

Solenolambrus bellii A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 163, pl. 29, figs. 6–6*d* (type-locality, Mexico; type in Paris Mus.).

Mesorhoea gilli RATHBUN, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 235 (type-locality, Gulf of California, 20 to 71 fathoms; holotype, Cat. No. 17370, U.S.N.M.).

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[58] Incorrectly represented in Crust. Rég. Mex., pl. 29, fig. 5*a*.

Material examined of Mesorhoea sexspinosa

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″									
Florida:											
Gulf of Mexico, off Pensacola.	Pensacola Light, N. NW. ⅛ N., 9⅜ miles.		12	S.	°F 59.7	Jan. 18, 1913	28	*Fish Hawk*	1 ovig. ♀	50456	
North Key Section	29 02 30	83 14 00	4.25	sdy	°C 14.8	Nov. 28, 1901	7181	do.	1 ♂	49202	"Paratypes" of *S. fastigus.*
Dry Tortugas			16					J. B. Henderson	1 ♀	49227	
Inside Sombrero			13					*Bache*; Wm. Stimpson.	2	3045, M.C.Z.	
West Indies:											
Porto Rico	Off Point Molines; Atalaya Rock, N. ¼ E., 17.5 miles; Point Guaniquilla, S. by E. ¾ E., 1⅛ miles.		8		27	Jan. 25, 1899	6073	*Fish Hawk*	1 y. ♀	24238	
Flannegan Passage			27	S. brk. Sh.	°F 77.75	1878–1879	142	*Blake*	1	2762, M.C.Z.	"*S. fastigatus.*"

Diagnosis.—Carapace one-third broader than long. Branchial ridge strongly curved. Branchial spine the most slender. Movable finger oblique, with a large, smooth bead tubercle on outside of base.

Description.—Surface minutely pubescent. Cardiac, gastric, and branchial elevations angular, each prolonged in a three-sided spine, the branchial spine smallest and situated on postero-lateral margin; angles or ridges crenulate or tuberculate; two ridges gradually diverge from gastric spine and are continued nearly to front; cardiac spine longest, laterally compressed; branchial ridge curved, subparallel to antero-lateral margin, and having a larger tubercle at the center; in front of branchial ridge a few scattered tubercles; one or two tubercles on hepatic region. Surface concave behind branchial ridge. Rostrum short, pubescent. Antero-lateral margin convex, distinctly crenulate; postero-lateral and posterior margins entire, thin, faint impressed lines indicating normal crenulation; postero-lateral margin concave, about twice as long as posterior margin, which is slightly convex in the middle and terminates in a triangular flattened spine at either angle. Ridge between subhepatic and afferent channels minutely crenulate, pubescent, continued on subbranchial region with several beadlike tubercles; suborbital tooth strongly ridged.

First segment of male abdomen very short; second widest, with a transverse denticulate crest, a larger denticle at extremities and middle; third, fourth, and fifth segments fused; sixth wider than long; seventh very short, triangular; abdomen and sternum smooth. Seven separate segments in female abdomen, first almost concealed by carapace, second having a transverse denticulate crest, third with a similar faint crest not continued to margins. Basal antennal joint with a long trigonal spine below. Ischium of maxillipeds punctate, outer margin pubescent, inner margin crenulate; merus with anterior margin concave, surface pubescent, uneven, an oblique groove running forward and outward, two tubercles on outer side of groove, one at antero-external angle; inner angle strongly produced, bearing a granulate ridge.

Chelipeds over twice as long as carapace, strong; merus trigonal, margins irregularly dentate or crenulate; carpus somewhat four-sided, margins finely denticulate or crenulate, a ridge across lower surface; hand long, trigonal, pubescent, upper surface slightly twisted, about 10 teeth on inner and on lower margin and 13 smaller teeth on outer margin; dactyl at right angles to upper surface of palm, a large white bead tubercle on outside of base. Legs compressed; merus, carpus, and propodus with cristate margins.

Measurements.—Female (17370), length of carapace 15.5, width of same 21, length of cheliped about 33 mm.

Range.—Lower California, outer side, from Abreojos Point southward; Gulf of California; Panama Bay. Depth, 9½ to 71 fathoms.

Material examined.—See table, page 551.

Genus AETHRA Leach

Æthra Leach, in Latreille, Nouv. Dict. Hist. Nat., vol. 4, 1816, p. 602; type, *A. scruposa* (Linnaeus).

Œthra Lamarck, Hist. Nat. Anim. sans Vert., vol. 5, 1818, p. 264.—Milne Edwards, Hist. Nat. Crust., vol. 1, 1834, p. 370.

Carapace oval and embossed, circumference dentate, a little raised and expanded so as to cover the ambulatory legs. Eyes very small, orbits circular. Basal article of antennae elongate, joined to the front by its inner angle; flagellum small, situated in the orbital hiatus. Basal article of antennules wide and almost quadrilateral. Buccal cavity narrowing anteriorly, epistome short. Outer maxillipeds very long; merus truncate anteriorly and outside, and without emargination for the insertion of the palpus. The legs can be entirely concealed under the carapace; they are compressed and have cristiform ridges. Abdomen of male composed of five segments, female of seven segments.

Material examined of Mesorhoea bellii

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	° ′ ″	° ′ ″			°F						
Mexico:											
Gulf of California	31 06 45	114 28 15	33	bn. M.	63.8	Mar. 27, 1889	3031	*Albatross*	1♀	17370	Holotype of *M. gilli.*
Do.	28 07 00	111 39 45	71	fne. gy. S brk. Sh	57.9	Mar. 23, 1889	3011	do	1♀	17368	
Do.	27 45 00	110 45 00	20	gn. M	65.2	Mar. 31, 1889	3037	do	1♂ 1♀	17376 M. C. Z.	
Do.	24 18 00	110 22 00	26.5	brk. Sh		Apr. 30, 1888	2823	do	1 y. ♂	25058	
Do.	24 16 00	110 22 00	21	gy. S. brk. Sh.		do	2822	do	2♂ 1♀	17367	
Do.	24 11 30 to 24 12 00	109 55 00	9.5–10	Sh		do	2826– 2828	do	2♂	21970	
Off Abreojos Point, Lower California.	26 14 00	113 13 00	48	yl. M	53.9	May 3, 1888	2834	do	9♂ 6♀	21972	
Magdalena Bay, Lower California.	24 32 00	111 59 00	12	fne. gy. S		May 2, 1888	2831	do	1♂	21971	
Panama: Panama Bay	7 56 00	79 41 30	51.5	gn. M		Mar. 30, 1888	2805	do	1♂	21969	

Material examined of Cryptopodia concava

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.
	° ′ ″	° ′ ″			°F					
Florida:										
South of Cape San Blas	28 45 00	85 02 00	30	gy. S. brk. Co.		Mar. 15, 1885	2405	*Albatross*	1♀	15184.
Off Charlotte Harbor	27 04 00	83 21 15	26	crs. gy. S. brk. Sh.		Mar. 18, 1885	2409	do	1♂	15185.
Do.	26 30 00	83 19 00	27.5	gy. S. brk. Sh.	67.5	Mar. 23, 1889	5115	*Grampus*	1♀	15219.
Off Cape Romano	26 06 00	83 11 00	30	hrd. S. Sh. M.	70	Mar. 18, 1889	5101	do	1♂	15218.
					°C					
Do.	25 50 15	82 41 45	21	sdy	20	Apr. 2, 1901	7124	*Fish Hawk*	1♂	25600.
Dry Tortugas			16					J. B. Henderson	1♀	49201.
Do.			4					do	1♀	49226.
Off Key West	Sand Key Light, W. ½ N., about 6½ miles.		20			June 24, 1893	39	State Univ. Iowa Exped.	1♀	Mus. S. U. I.
Bahamas: Bahama Banks						June 18, 1893			1♀	Do.
West Indies: Off St. Thomas	Sail Rock, NW. ½ W., 4 miles.		20	Co.	25	Feb. 6, 1899		*Fish Hawk*	1♀	21239.

Contains only one species, *A. scruposa*, ranging from the Indo-Pacific to the west coast of Mexico.

AETHRA SCRUPOSA SCUTATA Smith

Plate 195

Æthra scutata SMITH, Amer. Journ. Sci., ser. 2, vol. 48, 1869, p. 120 (type-locality, La Paz; holotype in Yale Univ. Mus.).

Œthra scruposa, var. *scutata* A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 170, pl. 31, figs. 2–2*e*.

Cryptopodia fornicata AURIVILLIUS, K. Svenska Vet.-Akad. Handl., vol. 23, 1888 (1889), p. 60. Not *C. fornicata* (Fabricius, 1793).

Diagnosis.—Carapace elliptical, lateral borders expanded so as to conceal the legs and cut by long, closed fissures into shallow teeth. Angles of chelipeds and legs projecting into dentate crests.

Description.—Carapace transversely and regularly elliptical; margins thin, slightly dentate, denticles separated by broad and very shallow sinuses; posterior margin nearly straight in the middle; anterior margin straight and parallel to posterior margin for a short space outside eyes; front projecting horizontally, its margin forming a semicircle; gastric region elevated, with a broad median depression extending to the front; anterior lobe of branchial region large and prominent, the broad space between branchial region and anterolateral margin concave; summits of elevations and a space along the posterior border tuberculous, rest of upper surface smooth; inferior lateral regions slightly convex and smooth. Chelipeds fitting close to carapace; angles projecting into dentate crests; outer and inferior surface of hand coarsely granulous. Legs short; angles projecting into thin, dentate crests. Sternum and abdomen deeply vermiculated. (Smith.)

Measurements.—Male, holotype, length of carapace 35.3, width of same 56.6 mm. (Smith.) Female, Mazatlan, length of carapace 60, width of same 90, length of hand 45 mm. (A. Milne Edwards.)

Range.—Mexico: La Paz, Lower California (Gulf of California), type-locality; Mazatlan (A. Milne Edwards, Aurivillius).

Remarks.—According to A. Milne Edwards (*loc. cit.*) this American form is only a variety of the Indo-Pacific *A. scruposa* (Linnaeus), differing from it in having the carapace less uneven and less rugose, and the ornamentation and fissures of the lateral borders more distinct. Typical *scruposa* is found in the Indian Ocean, Malay Archipelago, New Caledonia and Fiji Islands.[59]

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[59] For synonymy and description, see Alcock, Journ. Asiat. Soc. Bengal, vol. 64, 1895, p. 285.

Genus CRYPTOPODIA Milne Edwards

Cryptopodia Milne Edwards, Hist. Nat. Crust., vol. 1, 1834, p. 360; type, *C. fornicata* (Fabricius).

Carapace very broadly triangular, with very large lateral clypeiform vaulted expansions which conceal the ambulatory legs and are prolonged posteriorly far beyond base of abdomen. A ridge extends from gastric region across branchial region to the postero-lateral margin. Rostrum nearly horizontal, spatuliform and very prominent. Pterygostomian regions smooth, not ridged. Orbits very small, nearly circular, with a suture in superior margin. Epistome well developed; antennulary fossae narrow and somewhat oblique. Eyes very small and retractile. Basal antennal joint slightly dilated, not nearly reaching internal orbital hiatus, which is filled by the second joint. Buccal cavity and external maxillipeds small. Merus of maxillipeds distally truncated, antero-external angle produced. Chelipeds allied to those of *Parthenope*. Ambulatory legs with the fourth, fifth, and six joints more or less cristate. (After Alcock.)

Range.—Gulf of Mexico to West Indies; Lower California; Indo-Pacific region.

KEY TO THE AMERICAN SPECIES OF THE GENUS CRYPTOPODIA

A¹. Carapace 1.2 to 1.33 times as broad as long. Rostrum much broader than long________________ **concava, p. 553.**

A². Carapace 1.6 times as broad as long. Rostrum a little broader than long. **hassleri, p. 554.**

Analogous species on opposite sides of the continent: *concava* (Atlantic); *hassleri* (Pacific).

CRYPTOPODIA CONCAVA Stimpson

Plate 202, figs. 3 and 4; plate 282, figs. 6–11

Cryptopodia concava Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 137 (type-locality, off Conch Reef, 34 fathoms, type not extant).—A. Milne Edwards, Crust. Rég. Méx., 1878, p. 168, pl. 29, figs. 1–1*c* and 2–2*c*.

Diagnosis.—Carapace from 1.2 to 1.33 times as broad as long. Rostrum distinctly broader than long. Branchial ridges convex forward.

Description.—Carapace a little broader than long; antero-lateral margins twice as long as postero-lateral and meeting them at an obtuse angle; postero-lateral margins converging posteriorly very slightly, posterior margin straight in female, very slightly emarginate in male. Gastro-branchial ridges granulate; margin cut into small truncate teeth separated by closed fissures and with denticulate margins. The lateral expansions do not quite cover the feet when extended. Surface smooth and shining. Front triangular and flattened. Merus of maxillipeds triangular, its internal angle truncate. Upper surface of arm and hand of cheliped dilated toward middle; margins with a few obscure teeth, also denticulate. Crests of legs denticulate. Sternum very concave in front; a deep hollow fits terminal segment of abdomen; on each side of this hollow is a strong dentate crest prolonged to basal article of cheliped.

Measurements.—Male (15185), length of carapace 6.3, width of same 7.6 mm. Female (49201), length of carapace 9, width of same 12 mm.

Range.—West coast of Florida to Bahama Banks and St. Thomas, West Indies. Depth, 4 to 34 fathoms.

Material examined.—See table, page 551.

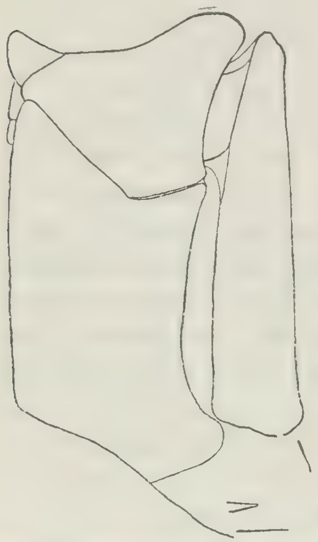

FIG. 151.—CRYPTOPODIA CONCAVA (49226), MAXILLIPED, × 28

CRYPTOPODIA HASSLERI, new species

Plate 202, figs. 1 and 2

Type-locality.—Magdalena Bay, Lower California, Mexico; *Hassler;* holotype, male (Cat. No. 2074, M. C. Z.).

Diagnosis.—Carapace much broader than long. Length and breadth of rostrum subequal. Closed fissures between marginal teeth extending well up on the carapace.

Description.—Closely allied to *C. concava,* from which it is distinguished by its greater breadth (1.6 times its length), narrower rostrum, rounder postero-lateral angles, greater extent of the closed fissures between the marginal teeth.

Measurements.—Male, holotype, length of carapace 6.3, width 10.2 mm.

Range.—Known from type-locality only.

Material examined.—The unique type.

Genus HETEROCRYPTA Stimpson

Heterocrypta STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 10, 1871, p. 102 [129]; type, *H. granulata* (Gibbes).

Differs from *Cryptopodia* in having posterior border of carapace slightly overlapping abdomen but not distinctly produced; lateral clypeiform expansions less produced than in *Cryptopodia,* so that the legs when even moderately extended can be seen beyond them; pterygostomian and subhepatic regions traversed by a granular ridge which runs parallel to antero-lateral border from angle of buccal cavity to base of chelipeds.

Range.—California to Panama; southern New England to West Indies; eastern Atlantic; Mediterranean; Red Sea; India; Japan.

KEY TO THE AMERICAN SPECIES OF THE GENUS HETEROCRYPTA

A¹. Branchial ridge terminating at a point inside lateral angle of carapace.
  B¹. Postero-lateral margin straight or nearly so between terminus of branchial ridge and lateral angle of carapace ---------------- **granulata**, p. 555.
  B². Postero-lateral margin concave between terminus of branchial ridge and lateral angle of carapace.
    C¹. Carapace wide, at least one and one-fourth times as wide as long. **macrobrachia**, p. 558.
    C². Carapace narrower, one and one-eighth times as wide as long. **lapidea**, p. 559.
A². Branchial ridge terminating at lateral angle of carapace-**occidentalis**, p. 559.

Analogous species on opposite sides of the continent: *lapidea* (Atlantic); *macrobrachia* (Pacific).

HETEROCRYPTA GRANULATA (Gibbes)

PENTAGON CRAB

Plate 203, figs. 1 and 2; plate 282, figs. 1–3

Cryptopodia granulata Gibbes, in George White, Statistics Georgia, Savannah, 1849, p. 21 (*nomen nudum*); Proc. Amer. Assoc. Adv. Sci., vol. 3, 1850, p. 173 [9] (type-localities, near Kiawah Island, Sullivans Island, and White Point Shoal, Charleston Harbor, South Carolina; a type-specimen from Sullivans Island and another from Charleston Harbor, 1850, are in the University of South Carolina at Columbia); Proc. Elliott Soc., vol. 1, 1856, p. 35, wood-cut.

Heterocrypta granulata Stimpson, Ann. Lyc. Nat. Hist. New York, vol. 10, 1871, p. 102.—A. Milne Edwards, Crust. Rég. Mex., 1878, p. 166, pl. 29, figs. 4–4*c*.

Diagnosis.—Carapace nearly one and one-half times as wide as long, margins crenulate. Postero-lateral margin between branchial ridge and lateral angle straight. Branchial ridges united by gastric ridge.

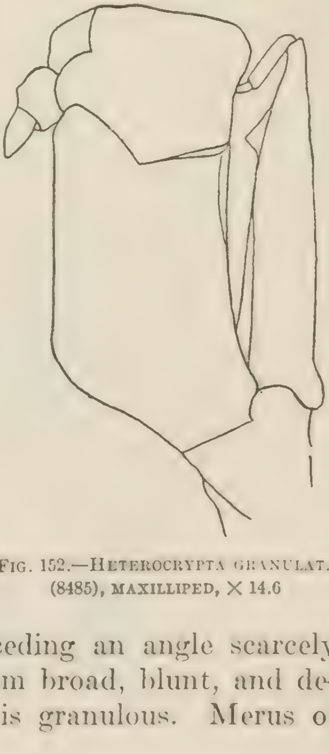

Fig. 152.—Heterocrypta granulata (8485), maxilliped, × 14.6

Description.—Carapace very wide, length two-thirds the width; the branchial ridge runs almost parallel to antero-lateral margin, except on gastric region, where it is transverse; from either end of this transverse portion a longitudinal crest runs forward to upper margin of orbit. A large domelike elevation on cardiac region, granulated at summit. General surface smooth and punctate; margins crenulate. Portion of margin between antero-lateral margin and the branchial ridge straight. The posterior margin forms with the preceding an angle scarcely perceptible except in a rear view. Rostrum broad, blunt, and deflexed, margins rounded. Lower surface is granulous. Merus of

Material examined of *Heterocrypta granulata*

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
Massachusetts:	° ′ ″	° ′ ″			°*F*						
Near Succonesset Lightship.			8–10			1871		A. Hyatt, U. S. Fish Comm.	1♂ 2♀	40035	
Nantucket Sound	Bishop & Clerks Lightship, E. ½ N.; Succonesset Lightship, W. ¼ N.		15.5	S. Sh. R.	69.5	Sept. 5, 1887	1243	*Fish Hawk*	1 y	12689	
Off Falmouth						Sept. 3, 1892		do	1♂	26114	
Woods Hole								S. F. Baird	2♂ 1♀	2509	
Do						Oct. 18, 1881		V. N. Edwards	1♂	5159	
Do								J. E. Benedict	2♂	18425	
Vineyard Sound			3–5			1884		U. S. Fish Comm.	1♂	8485	
Virginia:											
Hampton Roads			11–12			Apr. 8, 1887	(1)	*Albatross*	2♂	12454	
Virginia								J. S. Kingsley collection.	1♂	53037	From Boston Soc. Nat. Hist.
North Carolina:											
Off Harkers Island, near Beaufort.								*Fish Hawk*	1♀	51093	
Bogue Sound							Several	do	9	51055	
Do						July, 1912		W. P. Hay	2♀	51391	
Off New River Inlet	New River Inlet, N. by W. ½ W. 34 29 15	77 17 30	6	M. S. Sh. wh. P.	71	Oct. 18, 1913	7999	*Fish Hawk*	2	51104	
South Carolina: Calibogue Sound.						1891	(2)	do	5♂	18200	
Florida:											
Pensacola								J. E. Kauser	1♂	17918	
					°*C*						
Deadmans Bay section.	29 24 30	83 49 30	10	R. Co.	17	Dec. 6, 1901	7202	*Fish Hawk*	1♀	49203	
Pepperfish Key section.	29 23 00	83 27 05	3.5	S. G.	16.3	Nov. 21, 1901	7159	do	1♀	49204	
Cedar Keys			2					H. Hemphill	1♂ 2♀	17887	
Highland section	27 55 30	82 51 30	3	hrd. S. brk. Sh.	15.8	Jan. 28, 1902	7249	*Fish Hawk*	1♂	49205	
Sarasota Bay								J. S. Kingsley collection.	1♀	53036	From Boston Soc. Nat. Hist.
Punta Rassa			2					H. Hemphill	5♂ 3♀	17886	
Marco								do	2♂ 2♀	17885	

4 miles east of Cape Romano.			3			Apr. 18, 1887		J. F. Moser	1♂	13061
Smith Shoal, north of Key West.			4-5					J. B. Henderson.	1♂ 4♀	50386
Off Sand Key			75					do	1♀	50385
West Indies:										
Jamaica						Mar. 1-11, 1884		*Albatross*	1♀	18566
Port Royal, Jamaica								P. W. Jarvis	1♂	19069
Mayaguez, Porto Rico.						Jan. 20, 1899		*Fish Hawk*	1♂	24240

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[1] Station 2736 or 2737.

[2] Stations 1645, 1649, and 1651.

Material examined of Heterocrypta macrobrachia

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.
	Latitude N.	Longitude W.								
	° ′ ″	° ′ ″			° F					
Magdalena Bay, Lower California.	24 38 00	112 17 30	51	gn. M	56.4	May 2, 1888	2832	*Albatross*	1♂ 1♀	21974.
Do	24 35 20 Sail Rock, Entrada Point, S. 53° W.; Redondo Point, S. 15° W.	111 59 35	13.5	S. brk. Sh.		Mar. 21, 1911	5678	do	1 y.	55762.
Do	24 32 00	111 59 00	12	fne. gy. S.		May 2, 1888	2831	do	1♂	21973.

outer maxillipeds notched at inner angle. Chelipeds unequal, rather short and heavy. Upper surfaces of arm and hand dilated toward middle; margins irregularly denticulate. Fingers of larger cheliped gape, those of smaller do not. Merus of last pair of feet barely visible in a dorsal view. Third, fourth, and fifth segments of abdomen of male are fused; sixth segment has a sharp posterior, appressed spine, the tip of which lies between two tubercles on fifth segment.

Measurements.—Female (8485), length of carapace 14.5, width 21 mm.

Habitat.—Dredged on shingly bottom. Bears a striking resemblance to a freshly broken chip or flake of stone, the sharply defined edges of which are wonderfully imitated by the crab, even the claws assisting, so much so as often to deceive the collector even when he is on the alert, for he mistakes it for a small piece of broken pebble. (P. W. Jarvis.)

Range.—From Nantucket Sound, Massachusetts, to Georgia; Gulf coast of Florida and West Indies as far as St. Thomas (A. Milne Edwards).

Material examined.—See table, pages 556–557.

HETEROCRYPTA MACROBRACHIA Stimpson

Plate 203, figs. 3 and 4; plate 282, figs. 4 and 5

Heterocrypta macrobrachia STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 10, 1871, p. 103 [130] (type-locality, Panama; type not extant).—A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 167, pl. 29, figs. 3–3*b*.

Diagnosis.—Carapace one and one-fourth times as wide as long, margins dentate. Postero-lateral margin between branchial ridge and lateral angle deeply concave. Branchial ridges continued on gastric region and terminating in two high, adjacent, gastric tubercles.

Description.—Carapace narrower and less triangular than that of *H. granulata*, but resembling it in its granulated ridges and protuberances. Antero-lateral margin regularly convex and crenulated with 14 or 15 teeth which are themselves denticulated. Margin between lateral angle of carapace and projecting terminus of branchial ridge deeply concave. Posterior margins crenulated like the anterior, with a somewhat larger tooth on each side at junction of posterior with postero-lateral margins. Chelipeds very long, naked and smooth except at crenulated edges. Legs compressed, carinated; merus joints with sharp, minutely denticulated lower edge. A blunt downward-pointing spine on sixth segment of male abdomen.

Color.—Yellowish; sometimes with bluish-gray patches on the carapace and bands of the same color across the chelipeds. (Stimpson.)

Measurements.—Male (21973), length of carapace 14.2, width of same 18.2, length of cheliped 37.6 mm.

Range.—From Magdalena Bay, Lower California, Mexico, to Panama. Depth, 12 to 51 fathoms.

Material examined.—See table, page 557.

HETEROCRYPTA LAPIDEA Rathbun

Heterocrypta lapidea RATHBUN, Bull. U. S. Fish Comm., vol. 20, for 1900, pt. 2 (1901), p. 83, text-fig. 13 (type-locality, St. Thomas; holotype, Cat. No. 20324, U.S.N.M.).

Diagnosis.—Carapace one and one-eighth times as wide as long, margins dentate or lobate. Postero-lateral margin between branchial ridge and lateral angle concave. Two tubercles on connecting gastric ridge distant.

Description.—Carapace much narrower than in *H. granulata;* some of the granules of branchial ridges are thrown up in tubercles, one at gastric terminus of either ridge; a well-defined angle at other end of branchial ridge; margin concave between this angle and end of antero-lateral margin. A median furrow across front and anterior gastric region. Front longer, chelipeds longer and narrower than in *H. granulata;* margins of arm subparallel; dentation of margins stronger than that of *H. granulata.*

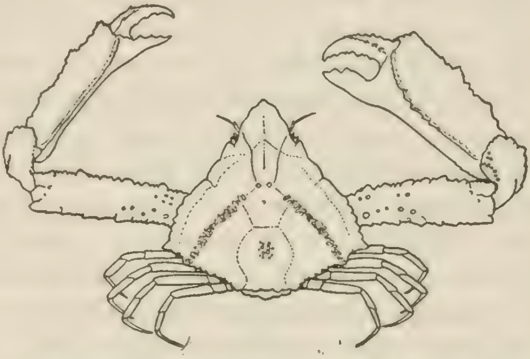

FIG. 153.—HETEROCRYPTA LAPIDEA, FEMALE (20324), CARAPACE 5.9 MM. LONG, DORSAL VIEW. (AFTER RATHBUN)

Measurements.—Female, holotype, length of carapace 5.9, width of same 6.6, length of outer margin of arm and hand each 4 mm.

Range.—Porto Rico and St. Thomas.

Material examined.—

Mayaguez, Porto Rico; January 20, 1899; *Fish Hawk;* 1 young (24227).

St. Thomas; *Albatross;* 1 female, holotype (20324).

HETEROCRYPTA OCCIDENTALIS (Dana)

Plates 204 and 205

Cryptopodia occidentalis DANA, Amer. Journ. Sci., ser. 2, vol. 18, 1854, p. 430, woodcut (type-locality, Monterey; type probably in Yale University Museum.[60] —STIMPSON, Boston Journ. Nat. Hist., vol. 4, 1857, p. 458.—A. MILNE EDWARDS, Crust. Rég. Mex., 1878, p. 169.

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[60] It is not possible at this time to verify the existence of the type, as it is perhaps among large collections now in storage.

Lambrus frons-acutis Lockington, Proc. California Acad. Sci., vol. 7, Feb. 7, 1876 (1877), p. 31 [4] (type-locality, Santa Catalina; type destroyed in San Francisco fire); Proc. California Acad. Sci., vol. 7, July 17, 1876 (1877), p. 78 [16].

Heterocrypta occidentalis Holmes, Occas. Papers California Acad. Sci., vol. 7, 1900, p. 44.

Diagnosis.—Branchial ridge very sinuous, terminating at lateral angle of carapace. Two tubercles in front of convex part of ridge. A triangular, depressed area each side of buccal cavity. A raised, oval disk above ischium of cheliped.

Description.—Carapace broadly triangular; median gastric region narrow, the flattened upper surface bounded by two granulated ridges which converge to a point behind; cardiac region furnished with a three-sided, pyramidal elevation, the edges of which are usually granulated. Postero-lateral regions large, crossed by a sinuous, granulated crest, which extends from near the posterior end of the median gastric region to the acute lateral angles of the carapace; in front of the anterior bend of this crest there is a pair of small tubercles. Rostrum triangular, subacute, not deflexed. Antero-lateral margins straight or slightly concave in front, convex near the middle, the posterior portion passing outwards and backwards, arching over the legs; the teeth on the anterior part are small and irregular, but they become larger posteriorly where they are furnished with secondary denticles. Postero-lateral margins transverse, posterior margin produced beyond them but not overhanging abdominal segments. Ischium of maxilliped smooth, antero-internal angle produced; merus small, surface concave, a prominent tooth near middle. A long triangular concave area extends from the subhepatic region back to the afferent branchial openings; it includes the exognath and is surrounded by a fringe of hair; outside this area, and above the ischium of the cheliped there is a raised, level, oval area against which the inner surface of the manus plays, when the cheliped is flexed.

Chelipeds long, trigonal; surface of merus convex, edges sharply granulate to dentate; carpus with three or four granular lines; angles of hand prominent and dentate, surfaces concave. Legs compressed, strongly carinated; dactyls narrow, strongly sulcate, and with long corneous tips. (Holmes, amended.)

Color.—Tips of tubercles white, ridges bearing tubercles light purplish, remainder of carapace mottled with numerous minute spots of white and purplish, giving a pink effect which often closely approaches white. Legs usually a light yellow. (Weymouth.)

Measurements.—Male (48905), length of carapace 19.4, width of same 32, length of cheliped 56.2 mm.

Variation.—Rostrum usually more acute in young than in adult; in the young there is also considerable pubescence along angles of chelipeds and especially in branchial and frontal regions, sometimes covering greater part of carapace, while carapace of adult is commonly smooth. Middle of posterior margin of carapace more prominently rounded in female than in male.

Range.—From the Farallones, California, to Los Coronados Islands, Mexico. Boca de Los Piedras, Sinaloa, Mexico (Lockington). Depth, 13 to 50 fathoms.

Material examined.—See table, page 562.

Family HYMENOSOMIDAE

Pinnothériens MILNE EDWARDS (part), Hist. Nat. Crust., vol. 2, 1837, p. 28.

Pinnotheridae-Hymenicinae DANA, U. S. Expl. Exped., vol. 13, Crust., 1852, pp. 379 and 384.

Hymenosminae [*Hymenosominae*] MILNE EDWARDS, Ann. Sci. Nat., Zool., ser. 3, vol. 20, 1853, p. 221 [187].

Hymenosomidae STIMPSON, Proc. Acad. Nat. Sci. Philadelphia, vol. 10, 1858, p. 108 [54].—BORRADAILE, Ann. Mag. Nat. Hist., ser. 7, vol. 19, 1907, p. 480.—ALCOCK, Journ. Asiat. Soc. Bengal, vol. 69, 1900, pp. 280, 282, 285, 291 and 385.

Pinnotheridae-Hymenosominae MIERS, *Challenger* Rept., Zool., vol. 17, 1886, pp. 274–275.

Majoidea-Hymenosomidae ORTMANN, in Bronn's Thier Reich, vol. 5, pt. 2, Arthropoda, 1898, p. 1168.

Hymenosomatidae STEBBING, Marine Invest. S. Africa, vol. 4, 1905, p. 49.

Carapace thin and flat. Chelipeds not long or especially mobile or with fingers bent at an angle with the hand. Male openings sternal. There are no orbits and the eyes are exposed and little retractile. The palp of the external maxillipeds articulates near the antero-external angle of the merus. Antennular fossae shallow and ill defined. Antennal peduncle slender. No hooked hairs.

Genus HALICARCINUS White

Halicarcinus WHITE, Ann. Mag. Nat. Hist., vol. 18, 1846, p. 178; type, *H. planatus* (Fabricius).

Liriopea NICOLET, in Gay, Hist. Chile, Zool., vol. 3, 1849, p. 158; type, *L. leachii* (Guérin).

Epistome well defined. Antennules not concealed by front. No septum between antennules. Merus and ischium of outer maxillipeds of subequal size.

South Temperate zone. Only one species is American.

Material examined of Heterocrypta occidentalis

Locality	Bearings		Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°F						
California:											
Gulf of the Farallones	37 42 00	122 53 20	33	yl. S.	50.8	Mar. 10, 1890	3101	*Albatross*	1♀	15598	
Monterey Bay	36 56 20	122 03 20	13	fne. S. rky.		Mar. 15, 1890	3142	do	2♂	15597	
Do	36 56 00	122 06 00	24	fne. gy. S. M.	53	do	3141	do	1♂	15599	
Do	36 55 30	122 02 00	19	fne. S. M. St.	55.4	do	3138	do	1♀	17378	
Do	Santa Cruz Lighthouse, N. 71° W., 2.4 miles.		10-12	fne. gy. S. R.		June 11, 1904	4560	do	1♂ 2 ovig. ♀	50400	
Do	Santa Cruz Lighthouse, N. 73° W., 3.3 miles.		14-15	crs. S. Sh. R.		do	4561	do	1♀	49206	
Do	Santa Cruz Lighthouse, N. 72° W., 8.1 miles.		10-11	hrd. S. R.		do	4562	do	1♂	48905	
Do	Point Pinos Lighthouse, S. 67° W., 4.6 miles.		26-31	fne. gy. S.		May 10, 1904	4442	do	1 y	49207	
Do	Point Pinos Lighthouse, S. 42° W., 7.6 miles.		13-15	fne. gy. S.		May 12, 1904	4459	do	1♂	48906	
Pacific Grove						July —, 1895		J. O. Snyder	1♂ 1♀	19816	
Off Santa Rosa Island	Off Brockway Point.		40-45			Apr. 15, 1904	4431	*Albatross*	1 ovig. ♀	50397	
Off Venice						1913-1914	(1)	*Anton Dohrn*	34	50124-6 50128 50131 50133-4 50136-9 50144-5	From Venice Mar. Biol. Lab.
Off San Pedro						1912-1914	(2)	do	22	50127 50129-30 50132 50135 50147	Do.
San Pedro								M. Baldridge	1♀	41496	
Do								H. N. Lowe	1♂	19732	
Off Catalina Island			50					do	2♂ 3♀ 2y	29958	
San Clemente Island						Jan. —, 1899		do	1♂	23062	
Off San Diego	32 35 00	117 13 30	22	gr. M. crs. G.	66	Mar. 24, 1898	3679	*Albatross*	1♂	21771	
Mexico:											
Off Los Coronados Islands.	32 28 45	117 16 15	36	fne gy S.	57.3	Jan. 26, 1889	2933	do	1♀	17377	

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[1] 13 stations.

[2] 26 stations.

HALICARCINUS PLANATUS (Fabricius)

Plate 202, fig. 5; plate 283

?Cancer orbiculus Fabricius, Syst. Ent., 1775, p. 402 (type-locality, New Zealand; type in Brit. Mus.).

Cancer planatus Fabricius, Syst. Ent., 1775, p. 403 (type-locality, Terra del Fuego; type in Brit. Mus.).

Leucosia planata Fabricius, Entom. Syst., Suppl., 1798, p. 350.

Halicarcinus planatus White, Ann. Mag. Nat. Hist., ser. 1, vol. 18, 1846, p. 178, pl. 2, fig. 1.—Dana, U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 385; atlas, 1855, pl. 24, figs. 7*a* and *b*.—Stebbing, Proc. Zool. Soc. London, 1900, p. 524, pl. 36B, and synonymy, except probably *Hymenosoma planatum* Haswell; Trans. Roy. Soc. Edinburgh, vol. 50, 1914, p. 271, and synonymy.—Chilton, Subantarctic Ids. of New Zealand, art. 26, 1909, p. 609.—Doflein and Balss, Jahrb. Hamburg. Wiss. Anst., vol. 29, 1912, p. 35.

Liriopea leachii Nicolet, in Gay, Hist. Chile, Zool., vol. 3, 1849, p. 160; atlas, vol. 2, 1854, Crust., pl. 1, figs. 1-1*f*; type-locality, Chile; type not extant).

Liriopea lucasii Nicolet, in Gay, Hist. Chile, Zool., vol. 3, 1849, p. 161 (type-locality, Chile; type not extant).

?Halicarcinus pubescens Dana, Proc. Acad. Nat. Sci. Philadelphia, vol. 5, 1851, p. 253; U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 386; atlas, 1855, pl. 24, fig. 8 (type-locality, off Cape Blanco, Patagonia, 50 fathoms; type not extant).

Diagnosis.—Lateral teeth of carapace below the marginal rim. Median frontal tooth a little smaller and less advanced than the lateral teeth. Supero-terminal tooth of merus of cheliped absent or obscure. Dactyli of ambulatory legs moderately curved.

Description.—Carapace distinctly broader than long, ovate, narrowed before; flat or even depressed, surrounded except the marginal teeth by a sharp rim; median grooves linear, the branchial groove strongly angled, the gastro-cardiac groove bent slightly backward at the middle; a median cardiac groove. Three similar frontal teeth, the median somewhat smaller. Two lateral teeth forming angles below the marginal rim; the posterior of these teeth is well developed and acute; the anterior is smaller and variable, usually obtuse, sometimes acute, sometimes obsolescent on one or both sides.

Chelipeds stout, especially in male; palms swollen, fingers nearly horizontal, gaping slightly in basal half, prehensile margins denticulate, a tooth on the dactyl within the gape. Legs slender, diminishing in length from the first to the fourth pair, the longer pairs exceeding the chelipeds; dactyli flattened, not very slender, moderately curved.

Abdomen of male constricted between the sixth and seventh segments, the seventh segment subtriangular.

Color.—Varying from slaty-blue to reddish-brown, legs banded (Mawson Exped.).

Measurements.—Male (18209), length of carapace 8.4, width 10.3 mm.

Habitat.—Under stones and kelp (Stebbing).

Range.—From Valparaiso, Chile, by way of Straits of Magellan to Patagonia; Falkland Islands; South Orkney Islands; Prince Edward Islands; Kerguelen Island; Macquarie Island; Campbell Island; Auckland Islands; New Zealand. To a depth of 270 meters (148 fathoms) (Doflein and Balss).

Material examined.—

Off Atlantic entrance to Straits of Magellan, Patagonia; lat. 52° 23′ 00″ S.; long. 68° 11′ 00″ W.; 10 fathoms; fne. gy. S.; January 17, 1888; station 2773, *Albatross;* 11 females (9 ovigerous) (22114).

Straits of Magellan; Patagonia; 1888; *Albatross:* Lat. 52° 22′ 30″ S.; long. 69° 22′ 00″ W.; 29.5 fathoms; S. St.; January 18; station 2775; 1 young female (22115). Lat. 52° 41′ 00″ S.; long. 69° 55′ 30″ W.; 21 fathoms; S. G.; January 18; station 2776; 1 female (22116).

Laredo Bay, Patagonia; January 22, 1888; *Albatross;* 3 males, 4 females (18209, 22120).

Sandy Point, Patagonia; January 24, 1888; *Albatross;* 2 males, 11 females (22117).

Borja Bay, Patagonia; February 1, 1888; *Albatross;* 1 female (22123).

Port Churruca, Patagonia; February 2, 1888; *Albatross;* 26 specimens (18210, 22118).

Mayne Harbor, Patagonia; February 5, 1888; *Albatross;* 1 female (22121).

Latitude Cove, Patagonia; February 6, 1888; *Albatross;* 30 females (22119).

Port Otway, Patagonia; February 9, 1888; *Albatross;* 3 females (22122).

Patagonia; Barnum Brown; 4 females (3 ovigerous) (53356); received from American Museum of Natural History.

Valparaiso, Chile; specimens in Copenhagen Mus.

Chiloe Island, Chile; January, 1923; Luis Moreira, collector; received from C. E. Porter; 1 male, 1 female (57003).

Falkland Islands; W. L. Josselyn; 1 female (53355); received from American Museum of Natural History.

Kerguelen Island; 1874; Dr. J. H. Kidder, U. S. N.; Transit of Venus Expedition; 1 male (19412); dredged in 5 fathoms, 3 specimens (2206); on rocky beach, 4 specimens (2207).

Macquarie Island; Mawson Expedition; 50 specimens; 4 specimens in U. S. National Museum (49091).

Cape Campbell, New Zealand; from Otago University Museum; 1 male, 1 female (16234).

EXPLANATION OF PLATES

The photographs of the Parthenopidae were taken and retouched by John Howard Paine. The remainder of the photographs made for this report, unless otherwise indicated, were taken by the U. S. National Museum and retouched by Seward H. Rathbun.

PLATE 1

Dasygyius depressus, male (21873), carapace 25.3 mm. long between tips of spines

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 2

Stenorynchus seticornis, male (42956), carapace 48.7 mm. long, dorsal view

PLATE 3

Stenorynchus seticornis, same specimen as plate 2, ventral view

PLATE 4

Stenorynchus debilis, male (15544), carapace 34.5 mm. long, dorsal view

PLATE 5

Stenorynchus debilis, same specimen as plate 4, ventral view

PLATE 6

Metoporhaphis calcarata, male (50981), carapace 21.3 mm. long, dorsal view

PLATE 7

Metoporhaphis calcarata, same specimen as plate 6, ventral view

PLATE 8

FIG. 1. *Anomalothir frontalis*, male (15157), carapace 13 mm. long to tip of horns, dorsal view.
2. *Anomalothir furcillatus*, female (54427), carapace 20.8 mm. long to end of horns, dorsal view.

PLATE 9

FIG. 1. *Anomalothir frontalis*, male (15157), carapace 13 mm. long to tips of horns, ventral view.
2. *Anomalothir furcillatus*, female (54427), carapace 20.8 mm. long to tips of horns, ventral view.

PLATE 10

Achaeopsis thomsoni

FIG. 1. Male (18672), carapace 10.3 mm. long to tips of horns, dorsal view.
2. Same, ventral view.
3. Female (18679), carapace 11.5 mm. long to tips of horns, dorsal view.

PLATE 11

FIG. 1. *Podochela riisei*, male (18075), carapace 18.7 mm. long, ventral view.
2. Same, dorsal view.
3. *Podochela lobifrons*, male holotype, carapace 20.4 mm. long, dorsal view.
4. Same, ventral view.

PLATE 12

Podochela sidneyi, male holotype, carapace 14 mm. long, dorsal view

PLATE 13

Podochela sidneyi, same specimen as plate 12, ventral view

PLATE 14

Podochela vestita, female (17330), carapace 9.8 mm. long. A bryozoan encrusts the right hepatic region

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 15

Podochela margaritaria, male holotype, carapace 15 mm. long

FIG. 1. Dorsal view.
2. Ventral view.

The loose legs are numbered according to their position on the body.

PLATE 16

Podochela macrodera, male (18670), carapace 11.5 mm. long

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 17

Podochela gracilipes, male (18089), carapace 12.3 mm. long

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 18

Podochela hemphillii, male (21862), carapace 24.1 mm. long

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 19

Podochela curvirostris, female (6945), carapace 21 mm. long

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 20

FIG. 1. *Podochela lamelligera*, female (18076), carapace 20 mm. long, dorsal view.
2. *Podochela lamelligera*, male (18076), carapace 18.2 mm. long, ventral view.
3. *Podochela barbarensis*, male holotype, carapace 23.8 mm. long, dorsal view. Rostrum bent abnormally to the right.
4. Same, ventral view.

Plate 21

Podochela latimanus, male holotype, carapace 26 mm. long

Fig. 1. Dorsal view
2. Ventral view.

Plate 22

Fig. 1. *Inachoides microrhynchus*, male (40463), carapace 17.8 mm. long, dorsal view.
2. Same, ventral view.
3. *Inachoides laevis*, female (50641), with appendages separate, carapace 6.6 mm. long, dorsal view.
4. Same, ventral view.
5. *Inachoides laevis*, old male (1247, M.C.Z.), carapace 10.7 mm. long, ventral view.
6. Same, dorsal view. Figures 5 and 6 photographed by George Nelson, Museum of Comparative Zoölogy.

Plate 23

Fig. 1. *Eucinetops blakiana*, male holotype, carapace 4.4 mm. long, dorsal view.
2. Same, ventral view.
3. *Eucinetops panamensis*, male holotype, carapace 10.5 mm. long to tip of horns, dorsal view.
4. Same, ventral view. Photographs of figures 3 and 4 by George Nelson, Museum of Comparative Zoölogy.
5. *Anasimus fugax*, male (24222), carapace 8 mm. long, ventral view.
6. Same specimen, dorsal view.

Plate 24

Oregonia gracilis, male (48833), carapace 65.4 mm. to tips of horns, dorsal view

Plate 25

Oregonia gracilis, same specimen as plate 24, ventral view

Plate 26

Oregonia bifurca, female holotype, carapace 26.4 mm. long, dorsal view

Plate 27

Oregonia bifurca, same specimen as plate 26, ventral view

Plate 28

Oregonia bifurca, male (46489), carapace 28.2 mm. long

Fig. 1. Dorsal view.
2. Ventral view.

Plate 29

Collodes robustus, male (18763), carapace 26,3 mm. long to tips of horns

Fig. 1. Dorsal view.
2. Ventral view.

Plate 30

Eurypodius latreillii, male (21887), carapace 69 mm. long, dorsal view

PLATE 31

Eurypodius latreillii, same specimen as plate 30, ventral view

PLATE 32

FIG. 1. *Arachnopsis filipes*, male (18117), carapace 7 mm. long, dorsal view.
2. Same, ventral view.
3. *Aepinus septemspinosus*, male (24150), carapace 8 mm. long from tip of posterior spine, dorsal view.
4. Same, ventral view.

PLATE 33

FIG. 1. *Euprognatha rastellifera*, male (46979), carapace 9.3 mm. long, profile.
2. Same, dorsal view. *a*. Carapace and cheliped. *b*. Ambulatory leg.
3. *Euprognatha rastellifera marthae*, male holotype, carapace 14.3 mm. to tip of rostrum, ventral view.
4. Same, dorsal view.

PLATE 34

FIG. 1. *Euprognatha rastellifera acuta*, male (18108), carapace 10 mm. long.
2. Same, profile.
3. *Euprognatha gracilipes*, male (9509), carapace 8.8 mm. long, dorsal view.
4. Same, ventral view.
5. *Euprognatha bifida*, male holotype, carapace 9 mm. long to tips of rostrum, dorsal view.
6. Same, ventral view.

PLATE 35

FIG. 1. *Eurypodius longirostris*, male holotype, Chile, carapace 19 mm. long to base of rostrum, dorsal view. After Miers.
2. Same, in profile. After Miers.
3. *Euprognatha rastellifera=inermis*, male, Guadeloupe, carapace 8.5 mm. long, in profile. After A. Milne Edwards.
4. Same, anterior part, ventral view. After A. Milne Edwards.
5. *Euprognatha granulata*, female cotype, carapace 8.9 mm. long, dorsal view. After Faxon.
6. Same, anterior part, ventral view. After Faxon.

PLATE 36

FIG. 1. *Collodes granosus*, female (21863), carapace 8.5 mm. long, dorsal view.
2. Same, ventral view.
3. *Collodes obesus*, female (46984), carapace 11 mm. long, dorsal view.
4. Same, ventral view.
5. *Collodes trispinosus*, male (9783), carapace 14 mm. long to tips of horns, dorsal view.
6. Same, ventral view.
7. *Collodes rostratus*, male (21864), carapace 11.4 mm. long, dorsal view.
8. Same, ventral view.

PLATE 37

Collodes tenuirostris, male (21867), carapace 18 mm. long

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 38

FIG. 1. *Collodes levis*, female cotype, carapace 5.3 mm. long, dorsal view.
2. Same, ventral view.
3. *Collodes inermis*, male (24142), carapace 8.6 mm. long, dorsal view.
4. Same, ventral view.
5. *Collodes leptocheles*, male holotype, carapace 16.5 mm. long to tips of horns, dorsal view.
6. Same, ventral view.

PLATE 39

FIG. 1. *Batrachonotus fragosus*, male (47069), carapace 7.2 mm. long from tip of posterior spines to tips of rostrum, ventral view; also outer view of left cheliped.
2. Same specimen, dorsal view.
3. *Batrachonotus fragosus*, female (19943), carapace 6.6 mm. long, ventral view, chelipeds detached.
4. Same specimen, dorsal view.
5. *Batrachonotus nicholsi*, male (21872), carapace 9 mm. long, dorsal view.
6. Same, ventral view.
7. *Batrachonotus nicholsi*, female (21869), carapace 12.5 mm. long, dorsal view.
8. Same, ventral view.

PLATE 40

FIG. 1. *Collodes tumidus*, male holotype, carapace 11.6 mm. long, dorsal view.
2. Same, ventral view.
3. *Pyromaia tuberculata*, young male (21880), carapace 9 mm. long, dorsal view.

PLATE 41

FIG. 1. *Pyromaia cuspidata*, female (46778), carapace 29 mm. long, dorsal view.
2. Same, ventral view.
3. *Pyromaia cuspidata*, male (46778), carapace 40.6 mm. long, with barnacles attached to rear, ventral view showing development of chelipeds.

PLATE 42

Pyromaia arachna, male holotype, carapace 45 mm. long, dorsal view. A *Lepas* attached to rear

PLATE 43

Pyromaia arachna, same specimen as plate 42, ventral view

PLATE 44

Acanthonyx petiverii, male (18673), carapace 14.8 mm. long to tips of horns

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 45

FIG. 1. *Epialtus kingsleyi*, male holotype, carapace 7.7 mm. long. *a*. Dorsal view of carapace. *b*. Outer view of left cheliped.
2. *Epialtus dilatatus*, female (47085), carapace 8.6 mm. long, dorsal view.
3. *Epialtus bituberculatus*, male (24849), carapace 13.8 mm. long, dorsal view.
4. Same, ventral view.

PLATE 46

FIG. 1. *Epilatus hiltoni*, male (18136), total length of carapace 10.8 mm., dorsal view.
2. Same, ventral view.
3. *Epialtus sulcirostris*, male, San Marcos Island, carapace 11.2 mm. long, ventral view.

PLATE 47

FIG. 1. *Epialtus minimus*, male, San Marcos Island, carapace 16 mm. long, dorsal view.
2. *Epialtus sulcirostris*, male, San Marcos Island, carapace 11.2 mm. long, dorsal view.

PLATE 48

Epialtus dilatatus forma elongata, male holotype, total length of carapace 11.5 mm.

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 49

FIG. 1. *Menaethiops portoricensis*, female holotype, carapace 5.4 mm. long to tips of horns, dorsal view.
2. *Menaethiops portoricensis*, male paratype, × 3⅓; horns broken off, ventral view.
3. *Mocosoa crebripunctata*, male (18129), carapace 7 mm. long, dorsal view.
4. Same, ventral view.
5. *Eupleurodon peruvianus*, female holotype, total length of carapace 10 mm., dorsal view, legs detached.
6. Same, ventral view, legs removed.

PLATE 50

Taliepus nuttallii, male (3108), total length of carapace 100.5 mm., dorsal view

PLATE 51

Taliepus nuttallii, same specimen as plate 50, ventral view

PLATE 52

Taliepus marginatus, male (40459), total length of carapace 99.8 mm., dorsal view

PLATE 53

Taliepus marginatus, same specimen as plate 52, ventral view

PLATE 54

Taliepus dentatus, male (21903), total length of carapace 94.7 mm., dorsal view

PLATE 55

Taliepus dentatus, same specimen as plate 54, ventral view

PLATE 56

Pugettia producta, old male (47970), total length of carapace 87 mm., dorsal view

PLATE 57

Pugettia producta, same specimen as plate 56, ventral view

PLATE 58

Pugettia gracilis, old male (5771), carapace 53.3 mm. long to tips of horns

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 59

FIG. 1. *Pugettia dalli*, male (17506), total length of carapace 10.8 mm., dorsal view.
2. Same, ventral view.
3. *Pugettia dalli*, female (17506), total length of carapace 12 mm., dorsal view.
4. Same, ventral view.
5. *Pugettia venetiae*, male (50268), total length of carapace 16 mm.
6. *Pugettia venetiae*, male (50268), left cheliped, upper length of palm 5.7 mm.
7. *Pugettia venetiae*, female holotype, total length of carapace 20.7 mm., dorsal view.

PLATE 60

Mimulus foliatus, male (3291), total length of carapace 23 mm.; encrusted with bryozoans

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 61

Leucippa pentagona, male (21900), total length of carapace 16.3 mm.

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 62

Sphenocarcinus corrosus, female (51071), total length of carapace 20.2 mm.

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 63

Sphenocarcinus agassizi, male holotype, total length of carapace 35 mm.

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 64

Loxorhynchus grandis, male (17379), total length of carapace 84 mm., dorsal view

PLATE 65

Loxorhynchus grandis, same specimen as plate 64, ventral view

PLATE 66

Loxorhynchus crispatus, male (15601), total length of carapace 90 mm., dorsal view

Plate 67

Loxorhynchus crispatus, same specimen as plate 66, ventral view

Plate 68

Rochinia crassa, male (18671), total length of carapace 102.3 mm., dorsal view; encrusted with many barnacles, *Poecilasma inaequilaterale* Pilsbry

Plate 69

Rochinia crassa, same specimen as plate 68, ventral view

Plate 70

Rochinia hystrix, male (46703), total length of carapace 41.4 mm., dorsal view

Plate 71

Rochinia hystrix, same specimen as plate 70, ventral view

Plate 72

Rochina umbonata, male (11377), total length of carapace 26.5 mm.

Fig. 1. Dorsal view.
2. Ventral view.

Plate 73

Fig. 1. *Rochinia umbonata*, female (11377), total length of carapace 30.5 mm., dorsal view.
2. *Lissa brasiliensis*, female holotype, carapace 16.6 mm. long, dorsal view. Photograph by George Nelson, Museum of Comparative Zoölogy.
3. *Lissa bicarinata*, female (24120), carapace 9.6 mm. long, dorsal view.
4. Same, ventral view.

Plate 74

Libidoclaea smithii, male (21922), total length of carapace 48 mm., dorsal view

Plate 75

Libidoclaea smithii, same specimen as plate 74, ventral view

Plate 76

Libidoclaea granaria, male (21919), total length of carapace 38.7 mm., dorsal view

Plate 77

Libidoclaea granaria, same specimen as plate 76, ventral view

Plate 78

Libidoclaea granaria, old male (1870, M. C. Z.), carapace 90.5 mm. long to tips of rostrum, dorsal view; encrusted with *Balanus*. Photograph by George Nelson, Museum of Comparative Zoölogy

Plate 79

Scyra acutifrons, male (31547), total length of carapace 32.4 mm.

Fig. 1. Dorsal view.
2. Ventral view.

PLATE 80

Trachymaia cornuta, male (11400), total length of carapace 16.2 mm.

FIG. 1. Ventral view.
2. Dorsal view.

PLATE 81

Notolopas lamellatus, male (48805), total length of carapace 20.2 mm.

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 82

Leurocyclus gracilipes, male (21907), carapace 12.7 mm. long, dorsal view

PLATE 83

Leurocyclus gracilipes, same specimen as plate 82, ventral view

PLATE 84

Chionoecetes opilio, male (10207), total length of carapace 93.6 mm., dorsal view; encrusted with serpulids

PLATE 85

Chionoecetes opilio, same specimen as plate 84, ventral view

PLATE 86

Chionoecetes bairdi, male (19307), total length of carapace 70.3 mm., dorsal view

PLATE 87

Chionoecetes bairdi, same specimen as plate 86, ventral view

PLATE 88

Chionoecetes tanneri, male (46468), total length of carapace 94.5 mm., dorsal view

PLATE 89

Chionoecetes tanneri, same specimen as plate 88, ventral view

PLATE 90

Chionoecetes angulatus, male holotype, median length of carapace 73 mm., dorsal view

PLATE 91

Chionoecetes angulatus, same specimen as plate 90, ventral view

PLATE 92

Hyas araneus, male (10229), total length of carapace 72.4 mm., dorsal view

PLATE 93

Hyas araneus, same specimen as plate 92, ventral view

PLATE 94

Hyas coarctatus, male (4554), total length of carapace 29.5 mm., dorsal view

PLATE 95

Hyas coarctatus, same specimen as plate 94, ventral view

PLATE 96

Hyas coarctatus alutaceus, male (15873), total length of carapace 77 mm., dorsal view

PLATE 97

Hyas coarctatus alutaceus, same specimen as plate 96, ventral view

PLATE 98

FIG. 1. *Pelia pacifica*, male (46077), total length of carapace 12.2 mm., ventral view.
2. *Pelia mutica*, male (14458), total length of carapace 12.8 mm., dorsal view.
3. Same, ventral view.

PLATE 99

FIG. 1. *Pelia pacifica*, male (46077), total length of carapace 12.2 mm., dorsal view; overgrown with sponge and bryozoans.
2. *Pelia tumida*, male (16348), total length of carapace 12.5 mm., dorsal view.
3. Same, ventral view.

PLATE 100

Pelia rotunda, male (17321), total length of carapace 17.5 mm.; *Balanus* attached

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 101

Micropisa violacea, male (334, Mus. Paulista), length of carapace 51 mm.

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 102

Nibilia antilocapra, male (14091), total length of carapace 54.2 mm., dorsal view

PLATE 103

Nibilia antilocapra, same specimen as plate 102, ventral view

PLATE 104

FIG. 1. *Herbstia depressa*, female, Barbados, total length of carapace 14.8 mm., dorsal view. (After Rathbun.) Photograph lent by State University of Iowa.
2. *Herbstia pyriformis*, male (1895, M. C. Z.), total length of carapace 14.7 mm., dorsal view.
3. Same, ventral view. Figures 2 and 3 photographed by George Nelson, Museum of Comparative Zoölogy.

PLATE 105

FIG. 1. *Herbstia camptacantha*, male cotype (991, M. C. Z.), length of carapace 17.1 mm., dorsal view.
2. Same, ventral view.

FIG. 3. *Herbstia edwardsii*, female (1879, M. C. Z.), total length of carapace 10.5 mm., dorsal view.
4. Same, ventral view. Figures 1–4 photographed by George Nelson, Museum of Comparative Zoölogy.
5. *Herbstia tumida*, female (Amer. Mus.), total length of carapace 13.5 mm., dorsal view.
6. Same, ventral view.

PLATE 106

Herbstia parvifrons, male (32962), total length of carapace 43.3 mm.

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 107

Chorinus heros, male (47353), total length of carapace 54 mm.

FIG. 1. Ventral view.
2. Dorsal view.

PLATE 108

Holoplites armata, female (6941), total length of carapace 23.4 mm.

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 109

Libinia erinacea, immature female (46292), length of carapace measured between tips of spines 32.2 mm.

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 110

Libinia emarginata, male (3136), total length of carapace 82.6 mm., dorsal view

PLATE 111

Libinia emarginata, same specimen as plate 110, ventral view

PLATE 112

Libinia emarginata, variety, female (15203), total length of carapace 71.5 mm., dorsal view

PLATE 113

Libinia emarginata, variety, same specimen as plate 112, ventral view

PLATE 114

Libinia dubia, male (4905), total length of carapace 83.4 mm., dorsal view

PLATE 115

Libinia dubia, same specimen as plate 114, ventral view

PLATE 116

Libinia rhomboidea, male (48671), total length of carapace 90 mm., dorsal view

PLATE 117

Libinia rhomboidea, same specimen as plate 116, ventral view

PLATE 118

Libinia ferreirae, female (47833), total length of carapace 50.6 mm., dorsal view

PLATE 119

Libinia ferreirae, same specimen as plate 118, ventral view. Endopodite of right outer maxilliped removed

PLATE 120

Libinia spinosa, male, Ilha Victoria (Mus. Paulista), total length of carapace 69.8 mm., dorsal view

PLATE 121

Libinia spinosa, same specimen as plate 120, ventral view

PLATE 122

FIG. 1. *Libinia dubia*, young male (Phila. Acad.), holotype of *L. subspinosa* Streets, median length of carapace 37 mm., dorsal view.

2. *Libinia rostrata*, male, Brazil (Phila. Acad.), median length of carapace 70.4 mm., dorsal view. Photograph by the Philadelphia Academy of Natural Sciences.

PLATE 123

Paramithrax bäckströmi, male (55121), length of carapace 16.3 mm.

FIG. 1. Dorsal view.

2. Ventral view.

PLATE 124

FIG. 1. *Hemus cristulipes*, female (19724), carapace 7.6 mm. long, dorsal view.

2. *Hemus analogus*, female (21573), carapace 8.2 mm. long, dorsal view; chelipeds and legs detached.

3. Same, ventral view; chelipeds and legs detached, outer maxillipeds removed.

4. *Thoe aspera*, male (23773), carapace 10 mm. long to tips of rostrum, dorsal view.

5. Same, ventral view.

PLATE 125

FIG. 1. *Thoe puella*, male (46739), carapace 11.4 mm. long to tips of rostrum, dorsal view.

2. Same, ventral view.

3. *Thoe sulcata*, male (47121), carapace 13.6 mm. long to tips of rostrum, dorsal view.

4. Same, ventral view.

5. *Thoe panamensis*, male (48786), carapace 13.4 mm. long to tips of rostrum, dorsal view; inclined a little to left side.

6. Same, ventral view.

PLATE 126

Picroceroides tubularis, male (49084), carapace 20 mm. long

FIG. 1. Dorsal view.

2. Ventral view.

PLATE 127

Pitho aculeata, male (14054), carapace 24.2 mm. wide

FIG. 1. Dorsal view.

2. Ventral view.

PLATE 128

FIG. 1. *Pitho lherminieri*, male (51003), carapace 14.8 mm. wide, dorsal view.
2. *Pitho lherminieri*, female (51058), carapace 15.2 mm. wide, dorsal view.
3. *Pitho mirabilis*, female (15807), carapace 17.7 mm. wide, dorsal view.

PLATE 129

FIG. 1. *Pitho lherminieri*, male (51003), carapace 14.8 mm. wide, ventral view.
2. *Pitho lherminieri*, female (51058), carapace 15.2 mm. wide, ventral view.
3. *Pitho mirabilis*, male (15807), carapace 13.7 mm. wide, ventral view.

PLATE 130

FIG. 1. *Pitho sexdentata*, female (55116), carapace 12.3 mm. wide, dorsal view.
2. *Pitho picteti*, male (50654), carapace 17.6 mm. wide, dorsal view.
3. Same, ventral view.

PLATE 131

Pitho anisodon, male (15093), carapace 28.7 mm. wide

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 132

FIG. 1. *Pitho dispar*, female (24205), carapace 16 mm. wide, dorsal view.
2. *Pitho quadridentata*, male (19585), carapace 23 mm. wide, dorsal view.
3. *Pitho laevigata*, female (53051), carapace 34.4 mm. wide, dorsal view.
4. *Pitho laevigata*, carapace of Herbst's specimen, 34.8 mm. wide, dorsal view.

PLATE 133

FIG. 1. *Pitho dispar*, female (24205), carapace 16 mm. wide, ventral view.
2. *Pitho quadridentata*, male (19585), carapace 23 mm. wide, ventral view.
3. *Pitho laevigata*, female (53051), carapace 34.4 mm. wide, ventral view.

PLATE 134

FIG. 1. *Leptopisa setirostris*, male (47065), total length of carapace 22.6 mm., dorsal view.
2. Same, ventral view.
3. *Leptopisa setirostris*, male (6929), total length of carapace 22 mm., dorsal view.
4. *Anaptychus cornutus*, male (46076), total length of carapace 17 mm., dorsal view.
5. Same, ventral view.

PLATE 135

Mithrax spinosissimus, old male (41777), total length of carapace 170 mm., dorsal view

PLATE 136

FIG. 1. *Mithrax acuticornis*, male (25592), carapace 18.7 mm. wide, dorsal view.
2. Same, ventral view.
3. *Mithrax spinipes*, male (16064), carapace 10.3 mm. wide, ventral view.
4. Same, dorsal view.

PLATE 137

FIG. 1. *Mithrax bahamensis*, male (42513), carapace 16.4 mm. wide, ventral view.
2. Same, dorsal view.
3. *Mithrax cornutus*, female (32717), total length of carapace 40.4 mm., dorsal view.

Fig. 4. *Mithrax cornutus* (9502), carapace only, total length 32.4 mm., dorsal view.

Plate 138

Fig. 1. *Mithrax holderi*, female (25567), total length of carapace 27 mm., dorsal view.
2. Same, ventral view.
3. *Mithrax pilosus*, female, type of *Cancer aculeatus* Herbst in Berlin Museum, much reduced.

Plate 139

Mithrax hemphilli

Fig. 1. Male, Guadeloupe, in Geneva Museum, total length of carapace 34.5 mm., dorsal view.
2. Female (21948), total length of carapace 25.3 mm., dorsal view.
3. Same, ventral view.

Plate 140

Mithrax orcutti, female, Mexico, in Philadelphia Academy, total length of carapace 49 mm., dorsal view

Plate 141

Mithrax orcutti, same specimen as plate 140, ventral view

Plate 142

Mithrax bellii, male (25672), total length of carapace 63.6 mm., dorsal view

Plate 143

Mithrax bellii, same specimen as plate 142, ventral view

Plate 144

Mithrax verrucosus, male (15075), total length of carapace 47.4 mm.

Fig. 1. Dorsal view.
2. Ventral view.

Plate 145

Mithrax hispidus, old male (41523), length of carapace 84.2 mm., dorsal view

Plate 146

Mithrax hispidus, male (20706), total length of carapace 25.5 mm.

Fig. 1. Dorsal view.
2. Ventral view.

Plate 147

Fig. 1. *Mithrax braziliensis*, male (Rio de Janeiro) in Geneva Museum, total length of carapace 23 mm., dorsal view.
2. *Mithrax tortugae*, female (50442), carapace 24.8 mm. wide, dorsal view.
3. *Mithrax hispidus*, variety, male (21949), total length of carapace 51.1 mm., dorsal view.

Plate 148

Mithrax caribbaeus, male holotype, total length of carapace 66.3 mm., dorsal view. (After Rathbun)

PLATE 149

Mithrax caribbaeus, same specimen as plate 148, ventral view

PLATE 150

Mithrax pleuracanthus

FIG. 1. Male (7651), total length of carapace 23.8 mm., dorsal view.
2. Male (6983), total length of carapace 28.3 mm., dorsal view.

PLATE 151

FIG. 1. *Mithrax tuberculatus*, male (23178), carapace 13 mm. wide, dorsal view.
2. Same, ventral view.
3. *Mithrax sinensis*, male (21951), carapace 12.7 mm. wide, dorsal view.
4. Same, ventral view.

PLATE 152

Mithrax (*Mithraculus*) *sculptus*, male (14058), carapace 22.2 mm. wide

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 153

Mithrax (*Mithraculus*) *coryphe*, male (21957), carapace 26.5 mm. wide

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 154

FIG. 1. *Mithrax* (*Mithraculus*) *areolatus*, young (53961), total length of carapace 5.3 mm., dorsal view.
2. *Mithrax* (*Mithraculus*) *denticulatus*, male (3209), carapace 18.9 mm. wide, dorsal view.
3. Same, ventral view.

PLATE 155

Mithrax (*Mithraculus*) *nodosus*, male (25673), carapace 29.4 mm. wide. Right hind leg aborted

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 156

Mithrax (*Mithraculus*) *forceps*, male (46810), carapace 20.5 mm. wide

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 157

Mithrax (*Mithraculus*) *ruber*, male (50377), carapace 13.2 mm. wide

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 158

Mithrax (*Mithraculus*) *cinctimanus*, male (17963), carapace 18.7 mm. wide

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 159

FIG. 1. *Teleophrys cristulipes*, female (1226, M. C. Z.), much enlarged, ventral view.
2. Same, dorsal view. Figures 1 and 2 photographed by George Nelson, Museum of Comparative Zoölogy.
3. *Teleophrys ornatus*, female (23774), carapace 5.5 mm. long, ventral view.
4. Same, dorsal view.
5. *Teleophrys pococki*, male (25765), carapace 7.3 mm. long, ventral view.
6. Same, dorsal view.
7. *Teleophrys cristulipes*, male (46079), carapace 8 mm. long, ventral view, to show chelae.
8. *Teleophrys tumidus*, old male (40466), carapace 19 mm. wide, inclined a little to right, dorsal view.
9. Same, ventral view.

PLATE 160

Stenocionops furcata, male (49902), total length of carapace 126.3 mm. long, dorsal view

PLATE 161

Stenocionops furcata, same specimen as plate 160, ventral view

PLATE 162

Stenocionops contigua, old male (18512), total length of carapace 66.4 mm., dorsal view

PLATE 163

Stenocionops contigua, same specimen as plate 162, ventral view

PLATE 164

Stenocionops furcata coelata, male (51018), carapace 44 mm. long

FIG. 1. Ventral view.
2. Dorsal view.

PLATE 165

FIG. 1. *Stenocionops triangulata*, male (21940), total length of carapace 30 mm., dorsal view.
2. *Stenocionops spinosissima*, female (32712), total length of carapace 94 mm., dorsal view.

PLATE 166

FIG. 1. *Macrocoeloma trispinosum*, male (17959), total length of carapace 33.7 mm., ventral view.
2. *Macrocoeloma trispinosum nodipes*, male (46915), total length of carapace 44.8 mm., ventral view.

PLATE 167

Macrocoeloma trispinosum

FIG. 1. Male (17959), total length of carapace 33.7 mm., dorsal view.
2. Male (43027), covered with sponge, dorsal view, length of right chela 21.5 mm.

PLATE 168

FIG. 1. *Macrocoeloma trispinosum*, variety, male (43015), total length of carapace 42.6 mm., dorsal view.
2. *Macrocoeloma trispinosum nodipes*, male (46915), total length of carapace 44.8 mm., dorsal view.

PLATE 169

FIG. 1. *Macrocoeloma diplacanthum*, female (9365), total length of carapace 28.2 mm., dorsal view.
2. *Macrocoeloma laevigatum*, male (46933), total length of carapace 24.8 mm., dorsal view.
3. Same, ventral view.

PLATE 170

FIG. 1. *Macrocoeloma eutheca*, female (46932), total length of carapace 24 mm., dorsal view.
2. *Macrocoeloma intermedium*, male (9492), total length of carapace 25.3 mm., dorsal view.
3. *Macrocoeloma concavum*, female (24214), total length of carapace 37 mm., dorsal view.

PLATE 171

FIG. 1. *Macrocoeloma eutheca*, female (46932), total length of carapace 24 mm., ventral view.
2. *Macrocoeloma intermedium*, male (9492), total length of carapace 25.3 mm., ventral view.
3. *Macrocoeloma concavum*, female (24214), total length of carapace 37 mm., ventral view.

PLATE 172

Macrocoeloma subparallelum, male (48666), total length of carapace 34.6 mm.

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 173

FIG. 1. *Macrocoeloma heptacanthum*, female (21933), total length of carapace 11.1 mm., dorsal view.
2. *Macrocoeloma septemspinosum*, male (15128), total length of carapace 24 mm., dorsal view.
3. Same, ventral view.

PLATE 174

FIG. 1. *Microphrys interruptus*, male, Antigua (Mus. S. U. I.), total length of carapace 16.7 mm., dorsal view. (After Rathbun.) Photograph lent by the State University of Iowa.
2. *Microphrys interruptus*, male (48753), total length of carapace 10.7 mm., ventral view. Rhizocephalid parasite under abdomen.
3. Same, dorsal view.
4. *Macrocoeloma camptocerum*, male (46912), total length of carapace 40.8 mm., ventral view.

PLATE 175

Microphrys bicornutus, male (7580), total length of carapace 36.8 mm.

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 176

FIG. 1. *Microphrys platysoma*, male (20292), total length of carapace 17.2 mm., dorsal view. (After Rathbun.)
2. Same, ventral view.
3. *Microphrys antillensis*, male (43017), total length of carapace 14.1 mm., dorsal view.
4. Same, ventral view.
5. *Microphrys branchialis*, male (21576), total length of carapace 15.3 mm., dorsal view.
6. Same, ventral view.

PLATE 177

Microphrys triangulatus, male (21943), total length of carapace 15.2 mm.

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 178

Parthenope agonus, male (15173), carapace 15.2 mm. long, dorsal view

PLATE 179

Parthenope agonus, same specimen as plate 178, ventral view

PLATE 180

Parthenope (*Platylambrus*) *serrata*, male (18675), carapace 18.6 mm. long, dorsal view

PLATE 181

Parthenope (*Platylambrus*) *serrata*, same specimen as plate 180, ventral view

PLATE 182

Parthenope (*Platylambrus*) *pourtalesii*, male (48883), carapace 36.2 mm. long, dorsal view

PLATE 183

Parthenope (*Platylambrus*) *pourtalesii*, same specimen as plate 182, ventral view

PLATE 184

Parthenope (*Platylambrus*) *exilipes*, female (20599), carapace 27.4 mm. long, dorsal view

PLATE 185

Parthenope (*Platylambrus*) *exilipes*, same specimen as plate 184, ventral view

PLATE 186

Parthenope (*Platylambrus*) *fraterculus*, male (15182), carapace 14.4 mm. long, dorsal view

PLATE 187

Parthenope (*Platylambrus*) *fraterculus*, same specimen as plate 186, ventral view

PLATE 188

Parthenope (*Platylambrus*) *depressiuscula*, female (17866), carapace 26.7 mm. long

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 189

Parthenope (*Pseudolambrus*) *excavata*, female (3270), carapace 32.3 mm. long

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 190

FIG. 1. *Parthenope* (*Platylambrus*) *guerini*, (45.7*a* Brit. Mus.), type of *Lambrus crenatus* White, dorsal view. Photographed by the British Museum.
2. *Parthenope* (*Platylambrus*) *fraterculus*, female (46043), carapace 12.2 mm. long, dorsal view.

PLATE 191

Parthenope (*Platylambrus*) *guerini*, female (55783), carapace 31.4 mm. long

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 192

Solenolambrus typicus, male (48885), carapace 11.7 mm. long

FIG. 1. Front view.
2. Dorsal view.
3. Ventral view.

PLATE 193

Solenolambrus typicus, male (18438), carapace 10 mm. long

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 194

FIG. 1. *Solenolambrus decemspinosus*, male (18157), carapace 6 mm. long, dorsal view.
2. Same, ventral view.
3. *Solenolambrus tenellus*, male (18678), carapace 5.6 mm. long, dorsal view.
4. Same, ventral view.
5. *Solenolambrus portoricensis*, male (24237), carapace 7.3 mm. long, dorsal view.
6. Same, ventral view.

PLATE 195

Aethra scruposa scutata, male, Mazatlan, carapace 60 mm. long. After A. Milne Edwards

FIG. 1. Chela.
2. Outer maxilliped.
3. First leg.
4. Antennal region.
5. Fourth leg.
6. Entire animal, dorsal view.

PLATE 196

Thyrolambrus astroides, male (18160), carapace 18 mm. long

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 197

Thyrolambrus erosus, male (21577), carapace 14.4 mm. long

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 198

Leiolambrus punctatissimus, male (18180), carapace 13 mm. long

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 199

Leiolambrus nitidus, male (23776), carapace 6.4 mm. long

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 200

Mesorhoea sexspinosa, male (49202), carapace 6.8 mm. long

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 201

Mesorhoea bellii, female (17370), carapace 15.5 mm. long

FIG. 1. Dorsal view.
2. Ventral view.

PLATE 202

FIG. 1. *Cryptopodia hassleri*, male holotype, carapace 6.3 mm. long, ventral view.
2. Same, dorsal view. Figures 1 and 2 photographed by George Nelson, Museum of Comparative Zoölogy.
3. *Cryptopodia concava*, female (49201), carapace 9 mm. long, dorsal view.
4. Same, ventral view.
5. *Halicarcinus planatus*, female (22117), carapace 9.5 mm. long, dorsal view.

PLATE 203

FIG. 1. *Heterocrypta granulata*, male (5159), carapace 13.2 mm. long, ventral view.
2. Same, dorsal view.
3. *Heterocrypta macrobrachia*, male (21973), carapace 14 mm. long, dorsal view.
4. Same, ventral view.

PLATE 204

Heterocrypta occidentalis, male (48905), carapace 19.4 mm. long, dorsal view

PLATE 205

Heterocrypta occidentalis, same specimen as plate 204, ventral view

PLATE 206

Anomalothir furcillatus, male, Samboes, carapace 13.6 mm. long. After A. Milne Edwards

FIG. 1. Dorsal view.
2. Antennal region, ventral view.
3. Carapace in profile.
4. Abdomen.
5. Outer maxilliped.

PLATE 207

Anomalothir frontalis, male, Barbados, carapace 13.6 mm. long. After A. Milne Edwards.

FIG. 1. Dorsal view.
2. Antennal region, ventral view.
3. Carapace in profile.
4. Chela, outer view.
5. Sternum and abdomen.

PLATE 208

FIG. 1. *Podochela grossipes*, male, St. Thomas, carapace 13.5 mm. long, dorsal view. After Stimpson.
2. *Podochela riisei*, female, St. Thomas, carapace 18 mm. long, dorsal view. After Stimpson.

PLATE 209

FIG. 1. *Podochela margaritaria*, male holotype, carapace 15 mm. long, dorsal view. After Rathbun.
2. *Podochela hemphillii*, male (21862), carapace 24.1 mm. long, dorsal view. After Rathbun.

PLATE 210

Podochela curvirostris, male, Barbados, carapace 29 mm. long. After A. Milne Edwards

FIG. 1. Dorsal view.
2. Antennal region, ventral view.
3. Carapace in profile.
4. Sternum and abdomen.

PLATE 211

Anasimus fugax, male, Antilles, carapace 14.4 mm. long. After A. Milne Edwards

FIG. 1. Dorsal view.
2. Antennal region, ventral view.
3. Carapace in profile.
4. Outer maxilliped.

PLATE 212

Erileptus spinosus, male (17341), carapace 8.3 mm. long, dorsal view. After Rathbun

PLATE 213

Erileptus spinosus, female (17340), type of *Anasimus rostratus*, carapace 7.5 mm long, dorsal view. After Rathbun

PLATE 214

Anasimus latus, male holotype, carapace 25.5 mm. long. After Rathbun

FIG. 1. Dorsal view.
2. Outer maxilliped.
3. Ventral view of body.
4. Carapace in profile.

PLATE 215

Eurypodius latreillii. After Targioni Tozzetti. The two forms which he called *latreillii* and *audouini* are here combined

FIG. 1. Cheliped (*latreillii*).
2. Leg (*audouini*).
3. Second leg (*audouini*).
4. Third leg (*audouini*).
5. Cheliped (*audouini*).
6. Outer maxilliped (*audouini*).
7. Second maxilliped (*audouini*).
8. Abdomen of female (*latreillii*).
9. Anterior portion, ventral view (*audouini*).
10. Carapace (*audouini*).
11. Dactyl, upper view (*latreillii*).
12. First maxilliped (*audouini*).
13. Anterior portion, ventral view (*latreillii*).
14. Second maxilliped (*latreillii*).
15. First maxilliped (*latreillii*).

PLATE 216

Euprognatha rastellifera marthae, male, station 922, *Fish Hawk*, carapace about 14 mm. long. After Smith

FIG. 1 Dorsal view.
2. Carapace in profile.

PLATE 217

FIG. 1. *Collodes granosus*, female holotype, carapace 9.1 mm. long, dorsal view. After Stimpson.
2. *Collodes obesus*, female, Florida Strait, carapace 14.2 mm. long, anterior part, ventral view.
3. Same, left chela.
4. Same, dorsal view.
5. Carapace of same, in profile.
Figures 2 to 5, after A. Milne Edwards.
6. *Collodes armatus*, female holotype, carapace 9 mm. long, dorsal view. After Rathbun.

PLATE 218

FIG. 1. *Pyromaia tuberculata*, male (17350), carapace 14.6 mm. long, in profile.
2. Same, dorsal view.
3. Body of same, ventral view.
4. Outer maxilliped.
Figures 1 to 4, after Rathbun.
5. *Collodes tumidus*, male (21571), carapace 11.6 mm. long, dorsal view. After Rathbun.

PLATE 219

FIG. 1. *Acpinus septemspinosus*, male, Florida Strait, carapace 11 mm. long, sternum and abdomen.
2. Carapace, in profile.
3. Dorsal view.
4. *Arachnopsis filipes*, male, Florida Strait, carapace 6.6 mm. long, in profile.
5. Dorsal view.

Figures 1 to 5, after A. Milne Edwards.

6. *Eucinetops rubellula*, male holotype, total length of carapace 8 mm., dorsal view. After Stimpson.

PLATE 220

FIG. 1. *Epialtus brasiliensis*, male, Rio de Janeiro, carapace about 14 mm. long, dorsal view. After Dana.
2. *Taliepus marginatus*, young female, Rio de Janeiro, slightly reduced, dorsal view. After Bell.

PLATE 221

Taliepus marginatus, male, Valparaiso, carapace 102 mm. long, dorsal view. After Bell

PLATE 222

FIG. 1. *Acanthonyx petiverii*, male, Guadeloupe, about natural size, dorsal view.
2. Anterior half, ventral view.
3. Chela.
4. End of first ambulatory leg.
5. End of third ambulatory leg.
6. End of fourth ambulatory leg.

Figures 1 to 6, after A. Milne Edwards.

7. *Leucippa pentagona*, male, Rio de Janeiro, carapace 9 mm. long to end of rostrum, dorsal view.
8. Anterior portion, ventral view.
9. Part of cheliped.

Figures 7 to 9, after Dana.

10. *Esopus crassus*, female holotype, carapace 13 mm. long, dorsal view.
11. Same, anterior part, ventral view.
12. Carapace in profile.

Figures 10 to 12, after A. Milne Edwards.

PLATE 223

FIG. 1. *Sphenocarcinus agassizi*, male, Panama, total length of carapace 39 mm., dorsal view.
2. Anterior part, ventral view.

Figures 1 and 2, after Faxon.

3. *Sphenocarcinus corrosus*, female, Barbados, carapace 16 mm. long, dorsal view.
4. Carapace, in profile.
5. Anterior part, ventral view.

Figures 3 to 5, after A. Milne Edwards.

PLATE 224

After Dana

FIG. 1. *Chorilia longipes*, female, carapace 42 mm. long, dorsal view.
2. Frontal region of same, in profile.
3. Anterior half of same, ventral view.
4. *Scyra acutifrons*, male, Oregon, total length of carapace 28 mm., dorsal view.
5. Anterior half of same, ventral view.

PLATE 225

Chorilia longipes turgida, male (15500), carapace 69.8 mm. long, dorsal view. After Rathbun

PLATE 226

Rochinia crassa, after Smith

FIG. 1. Male, *Blake* station 319, total length of carapace 35.2 mm., dorsal view.
2. Female (5693), total length of carapace 71 mm., dorsal view.
3. Anterior half of same, ventral view.

PLATE 227

FIG. 1. *Rochinia tanneri*, male, cotype, *Fish Hawk* station 1043, total length of carapace 28 mm., dorsal view. After Smith.
2. *Rochinia cornuta*, male (21572), carapace 35.9 mm. long from posterior margin to end of rostrum, dorsal view. After Rathbun.

PLATE 228

Rochinia occidentalis, male (4404, M. C. Z.), median length of carapace 45 mm., dorsal view. After Faxon

PLATE 229

FIG. 1. *Rochinia gracilipes*, male, Cape Corrientes, carapace 23 mm. long, anterior half, ventral view.
2. Same, dorsal view of entire specimen.
3. Carapace of same, in profile.
4. Chela.
Figures 1 to 4, after A. Milne Edwards.
5. *Rochinia occidentalis*, male (4404, M. C. Z.), median length of carapace 45 mm., ventral view. After Faxon.

PLATE 230

Rochinia vesicularis, male, holotype, total length of carapace 20.7 mm. After Rathbun

FIG. 1. Dorsal view.
2. Anterior portion, ventral view.

PLATE 231

FIG. 1. *Libidoclaea granaria*, male, E. Patagonia, total length of carapace 60 mm., abdomen.
2. Same, anterior part, ventral view.
Figures 1 and 2, after Dana.

FIG. 3. *Libidoclaea smithii*, male, Chile, carapace nearly 26 mm. long, anterior part, ventral view. After Miers.
4. *Libidoclaea granaria*, male holotype, Valparaiso, carapace 67 mm. long, anterior part in profile.
5. Same, outer maxilliped.
6. Same, anterior part, ventral view.
Figures 4 to 6, after Milne Edwards and Lucas.

PLATE 232

FIG. 1. *Oplopisa spinipes*, female, Florida Strait, carapace including rostrum, 12.5 mm. long, anterior part, ventral view.
2. Same, dorsal view.
3. *Trachymaia cornuta*, male (2763, M. C. Z.), carapace 12 mm. long, seen in profile.
4. Same, anterior part, ventral view.
5. Same, dorsal view.
Figures 1 to 5, after A. Milne Edwards.
6. *Leurocyclus tuberculosus*, male type, carapace 52 mm. long, anterior part, ventral view.
7. Same, mouth parts.
8. Same, outer maxilliped.
9. Same, chela.
10. Same, merus of outer maxilliped.
11. Same, antennal region.
Figures 6 to 11, after Milne Edwards and Lucas.

PLATE 233

Leurocyclus tuberculosus, male type, carapace 52 mm. long. After Milne Edwards and Lucas

FIG. 1. Dorsal view.
2. Sternum.

PLATE 234

Chionoecetes tanneri, male holotype, carapace 119 mm. long to base of horns, dorsal view. After Rathbun

PLATE 235

Hyas lyratus, male (15922), total length of carapace 85 mm., dorsal view. After Rathbun

PLATE 236

Pisoides edwardsii

FIG. 1. Specimen from Valparaiso, antennal and orbital region, ventral view.
2. Same, outer maxilliped.
Figures 1 and 2, after Dana.
3. Cotype, 23 mm. long, dorsal view.
4. Same, rostrum and orbits, viewed obliquely.
5. Same, antennal and orbital region, ventral view.
6. Same, outer maxilliped.
7. Same, dactylus of an ambulatory leg.
Figures 3 to 7, after Milne Edwards and Lucas.

PLATE 237

Notolopas brasiliensis, male (16315), carapace 13 mm. long on median line, dorsal view. After Rathbun

PLATE 238

After Miers

FIG. 1. *Notolopas lamellatus*, male (Brit. Mus.), anterior portion, ventral view, × 5.5.
2. *Notolopas brasiliensis*, male holotype, carapace 10 mm. long on median line, abdomen.
3. *Notolopas brasiliensis*, variety with horns more divergent, male, carapace 16 mm. long on median line, anterior portion, ventral view.
4. *Notolopas brasiliensis*, male holotype, carapace 10 mm. long on median line, dorsal view.

PLATE 239

Nibilia antilocapra, male, Guadeloupe, total length of carapace 102 mm., dorsal view. After A. Milne Edwards

PLATE 240

FIG. 1. *Herbstia edwardsii*, male, Galapagos, total length of carapace about 17 mm., anterior portion, ventral view.
2. Same, abdomen.
3. Same, dorsal view.
4. *Herbstia edwardsii*, female, Galapagos, abdomen, enlarged.
5. *Herbstia pyriformis*, male, Galapagos, carapace about 20 mm. long, anterior part, ventral view.
6. Same, cheliped.
7. Same, abdomen.
8. Same, dorsal view of entire animal.

Figures 1 to 8, after Bell.

9. *Herbstia camptacantha*, male, Acapulco, carapace 16.5 mm. long, anterior part, ventral view.
10. Same, carapace in profile.
11. Same, abdomen.
12. Same, chela.
13. Same, entire animal, dorsal view.

Figures 9 to 13, after A. Milne Edwards.

PLATE 241

FIG. 1. *Pelia pulchella*, male, Galapagos, carapace 7 mm. long, anterior part, ventral view.
2. Same, abdomen.
3. Same, cheliped.
4. Same, entire animal, dorsal view.

Figures 1 to 4, after Bell.

5. *Micropisa violacea*, Cape Verde Islands, chela of well-developed male.
6. Same species, anterior part, ventral view.
7. Same species, sternum and abdomen of male.
8. Same species, dorsal view of entire animal, slightly enlarged.

Figures 5 to 8, after A. Milne Edwards.

PLATE 242

Libinia rostrata, male, Peru, total length about 71.5 mm., dorsal view. After Bell

PLATE 243

Libinia setosa, male (2300), total length of carapace 68 mm., dorsal view. After Rathbun

PLATE 244

After Rathbun

FIG. 1. *Libinia mexicana,* young male (16072), median length of carapace 10 mm., dorsal view.
2. *Lepteces ornatus,* male (9546), total length of carapace 16.4 mm., dorsal view.

PLATE 245

FIG. 1. *Libinia rhomboidea,* male, Cuba, total length of carapace about 82 mm., outer maxilliped.
2. Same, anterior portion, ventral view.
3. Same, abdomen.
Figures 1–3, after A. Milne Edwards.
4. *Libinia ferreirae,* carapace 68 mm. long, dorsal view.
5. Same, anterior portion, ventral view.
Figures 4 and 5, after Brito Capello.
6. *Holoplites armata,* male, Antilles, total length of carapace 25 mm., anterior part, ventral view.
7. Same, abdomen.
8. Same, entire animal, dorsal view.
Figures 6–8, after A. Milne Edwards.

PLATE 246

FIG. 1. *Lissa tuberosa,* male (21574), carâpace 16.9 mm. long, dorsal view. After Rathbun.
2. *Lissa aurivilliusi,* male (21575), carapace 12.5 mm. long, dorsal view. After Rathbun.
3. *Chorinus heros,* male, total length of carapace 64 mm., dorsal view.
4. Same, anterior portion, ventral view.
5. Same, maxilliped.
Figures 3–5, after H. Milne Edwards.

PLATE 247

Maiopsis panamensis, male holotype, length of carapace exclusive of rostrum 112 mm. After Faxon

FIG. 1. Dorsal view.
2. Anterior portion, ventral view.
3. Sternum and abdomen.
4. Fingers.

PLATE 248

After A. Milne Edwards

FIG. 1. *Thersandrus compressus*, male, Guadeloupe, carapace 23 mm. long, ventral view.
2. Same, anterior half, ventral view.
3. Same, dorsal view.
4. Same, first leg.
5. Same, fourth leg.
6. Same, abdomen.
7. Same, carapace in profile.
8. Same, carpus and chela.
9. *Hemus cristulipes*, male, Contoy, carapace 6 mm. long, anterior portion, ventral view.
10. Same, carapace in profile.
11. Same, outer maxilliped.
12. Same, second leg.
13. Same, outer antenna.
14. Same, dorsal view of entire animal.
15. Same, posterior view of carapace.

PLATE 249

FIG. 1. *Thoe erosa*, Galapagos, anterior portion, ventral view.
2. Same, posterior view of carapace and abdomen.
3. Same, male, carapace 15 mm. long, dorsal view of entire animal.
4. Same, abdomen.
5. Same species, abdomen of female.
6. Same species, cheliped of male.

Figures 1–6, after Bell.

7. *Temnonotus granulosus*, female (1937, M. C. Z.), median length of carapace 23 mm., in profile.
8. Same, entire animal, dorsal view.
9. Same, anterior portion, ventral view.
10. *Temnonotus simplex*, male (1938, M. C. Z.), median length of carapace 12 mm., in profile.
11. Same, entire animal, dorsal view.
12. Same, anterior portion, ventral view.

Figures 7–12, after A. Milne Edwards.

PLATE 250

FIG. 1. *Pitho quinquedentata*, male, Galapagos, carapace 17 mm. long, dorsal view.
2. Same, chela.
3. Same, anterior part, ventral view.

Figures 1 to 3, after A. Milne Edwards.

4. *Pitho quinquedentata*, female, type, carapace about 13 mm. long, dorsal view. After Bell.
5. *Pitho sexdentata*, female, type, carapace about 20 mm. wide, abdomen
6. Same, antennule.
7. Same, cheliped.
8. Same, dorsal view of entire animal.
9. Same, anterior part, ventral view.

Figures 5 to 9, after Bell.

Fig. 10. *Pitho quadridentata*, cotype, carapace 29.4 mm. wide, dorsal view. After Miers.

11. *Pitho laevigata*, male type,c arapace 40 mm. wide, anterior part, ventral view.
12. Same, abdomen.
13. Same, dorsal view of carapace.

Figures 11 to 13, after A. Milne Edwards.

Plate 251

After Rathbun

Fig. 1. *Pitho aculeata*, male (14054), carapace 24.3 mm. wide, dorsal view.

2. *Pitho anisodon*, male (15093), carapace 28.7 mm. wide, dorsal view.

Plate 252

After Rathbun

Fig. 1. *Pitho picteti*, young female (15822), carapace 8.5 mm. wide, dorsal view.

2. *Pitho lherminieri*, male (3158), type of *Othonia carolinensis*, carapace 14 mm. wide, dorsal view.

Plate 253

After Rathbun

Fig. 1. *Pitho mirabilis*, female (15807), carapace 17.5 mm. wide, dorsal view.

2. *Leptopisa setirostris*, male (6929), total length of carapace 22 mm., dorsal view.

Plate 254

Fig. 1. *Anaptychus cornutus*, male, holotype, length of carapace 25.4 mm., dorsal view. After Stimpson.

2. *Picroceroides tubularis*, male, type, median length of carapace about 16 mm., dorsal view.
3. Same, anterior part, ventral view.
4. Same, chela and carpus.
5. Same, carapace in profile.

Figures 2 to 5, after Miers.

Plate 255

After Bell

Fig. 1. *Mithrax rostratus*, male, type, total length of carapace 56 mm., dorsal view.

2. Same, abdomen.
3. Same species, abdomen of female.

Plate 256

Mithrax cornutus, male, Martinique, total length of carapace 92 mm. After A. Milne Edwards

Fig. 1. Dorsal view.

2. Anterior part, ventral view.

Plate 257

After Rathbun

Fig. 1. *Mithrax acuticornis*, male (15817), total length of carapace 15 mm. dorsal view.
2. *Mithrax holderi*, female (25567), total length of carapace 27 mm., dorsal view.

Plate 258

Mithrax pilosus, male (16299), total length of carapace 28 mm., dorsal view. After Rathbun

Plate 259

After Rathbun

Fig. 1. *Mithrax bahamensis*, male (42513), carapace 16.4 mm. wide, dorsal view.
2. *Mithrax hemphilli*, female (15823), total length of carapace 17.2 mm., dorsal view.

Plate 260

Mithrax sinensis, young male (16065), total length of carapace 9.2 mm., dorsal view

Plate 261

Mithrax laevimanus, male, Guadeloupe, length of carapace 65 mm. After A. Milne Edwards

Fig. 1. Dorsal view.
2. Anterior part, ventral view.
3. Abdomen.

Plate 262

Fig. 1. *Mithrax pygmaeus*, male holotype, length of carapace about 7 mm., dorsal view.
2. Same, abdomen.
3. Same, cheliped.
4. Same, anterior part, ventral view.
Figures 1 to 4, after Bell.
5. *Mithrax spinipes*, male, Galapagos, anterior portion, ventral view. After Bell.
6. *Mithrax armatus*, female, type, total length of carapace 47.3 mm., dorsal view. After Saussure.
7. *Teleophrys cristulipes*, male, type, carapace 7.6 mm. long, dorsal view. After Stimpson.
8. *Teleophrys ornatus*, young male, Fernando Noronha, carapace about 5 mm. long, carpus and chela.
9. Same, entire animal, dorsal view.
Figures 8 and 9, after Miers.

Plate 263

Coelocerus spinosus, female, type of *C. grandis*, length of carapace exclusive of rostrum 98 mm., dorsal view. After Rathbun

PLATE 264

FIG. 1. *Coelocerus spinosus*, young male, type (1989, M. C. Z.), carapace 23 mm. long, anterior part, ventral view.
2. Same, dorsal view of entire animal.
Figures 1 and 2, after A. Milne Edwards.
3. *Stenocionops spinosissima*, female, Guadeloupe, carapace 61 mm. long, dorsal view. After Saussure.
4. Same species, male, Rio de Janeiro, total length of carapace 135 mm., anterior part, ventral view. After Moreira.
5. *Stenocionops ovata*, female, Galapagos, total length of carapace 25.4 mm., dorsal view.
6. Same, outer maxilliped.
7. Same, anterior part, ventral view.
Figures 5 to 7, after Bell.

PLATE 265

Stenocionops spinosissima, male, Rio de Janeiro, total length of carapace 97 mm., dorsal view. After Moreira

PLATE 266

After Rathbun

FIG. 1. *Stenocionops triangulata*, young female, holotype, total length of carapace 18.7 mm., dorsal view.
2. *Stenocionops contigua*, young female (16067), total length of carapace 28 mm., dorsal view.

PLATE 267

Stenocionops spinimana, male holotype, total length of carapace 89 mm., dorsal view. After Rathbun

PLATE 268

Stenocionops macdonaldi, male holotype, total length of carapace 88 mm., dorsal view. After Rathbun

PLATE 269

FIG. 1. *Macrocoeloma diplacanthum*, female, Guadeloupe, total length of carapace about 32 mm., ventral view.
2. Same species, male, Guadeloupe, total length of carapace about 44 mm., dorsal view.
3. Same species, male, Guadeloupe, total length of carapace 39 mm., ventral view.
Figures 1 to 3, after Desbonne and Schramm.
4. *Macrocoeloma villosum*, male, Guayaquil, carapace about 43 mm. long. dorsal view.
5. Same species, abdomen of female.
6. Same species, abdomen of male.
7. Same species, anterior part, ventral view.
8. *Macrocoeloma heptacanthum*, male, Puerto Portrero, carapace about 37 mm. long, dorsal view.
9. Same species, abdomen of female.
10. Same species, abdomen of male.
11. Same species, anterior part, ventral view.
Figures 4 to 11, after Bell.

Plate 270

After Rathbun

Fig. 1. *Microphrys branchialis*, male (21576), total length of carapace 15.3 mm., dorsal view.

2. *Macrocoeloma camptocerum*, male (15141), total length of carapace 35 mm., dorsal view.

Plate 271

Fig. 1. *Microphrys aculeatus*, female, Galapagos, carapace about 20 mm. long, dorsal view. After Bell.

2. *Microphrys weddelli*, female, carapace about 34 mm. long, posterior view.
3. Same, anterior part, ventral view.
4. Same. entire animal, dorsal view.
5. Same, outer maxilliped.

Figures 2 to 5, after A. Milne Edwards.

6. *Microphrys weddelli*, male type, ventral view of body.
7. Same, dorsal view of entire animal.

Figures 6 and 7, after H. Milne Edwards.

Plate 272

Tyche emarginata, female, Guadeloupe, carapace about 25 mm. long. After Desbonne and Schramm

Fig. 1. Dorsal view.

2. Ventral view.

Plate 273

Fig. 1. *Tyche lamellifrons*, male, Panama, carapace about 18 mm. long, anterior part, ventral view.

2. Same, entire animal, dorsal view.
3. Same, antennule.
4. Same, outer maxilliped.
5. Same, abdomen.
6. Same, cheliped.

Figures 1 to 6, after Bell.

7. *Tyche emarginata*, female, Guadeloupe, total length of carapace 35 mm., ventral view.
8. Same, outer maxilliped.
9. Same, carapace in profile.
10. Same, anterior part, ventral view.
11. Same, dorsal view of entire animal.
12. Same, chela.

Figures 7 to 12, after A. Milne Edwards.

Plate 274

After Bell

Fig. 1. *Dasygyius gibbosus*, male holotype, Galapagos, carapace, 15.2 mm. long, abdomen.

2. Same, cheliped.
3. Same, antenna.
4. Dorsal view of entire animal.
5. *Dasygyius depressus*, female holotype, Galapagos, carapace 15.2 mm., long, abdomen.
6. Anterior portion, ventral view.
7. Cheliped.
8. Dorsal view of entire animal.

PLATE 275

After A. Milne Edwards

FIG. 1. *Parthenope agonus*, male, Florida Strait, carapace 12 mm. long, dorsal view.
2. Same, chela.
3. Same, anterior part, ventral view.
4. *Parthenope hyponca*, female, Mazatlan, carapace 29 mm. long, dorsal view.
5. Same, chela.
6. Same, anterior part, ventral view.
7. *Parthenope* (*Platylambrus*) *serrata*, male, Vera Cruz, carapace 24 mm. long, chela.
8. Same, abdomen.
9. Same, anterior portion, ventral view.
10. Same, entire animal, dorsal view.

PLATE 276

Parthenope (*Platylambrus*) *pourtalesii*, female (7308), carapace 32.8 mm. long, dorsal view. After Smith

PLATE 277

FIG. 1. *Parthenope* (*Platylambrus*) *exilipes*, male (4481, M. C. Z.), ventral view.
2. Same species, female (20599), length of carapace 27.4 mm., dorsal view.
Figures 1 and 2, after Faxon.
3. *Tutankhamen cristatipes*, male, St. Vincent, carapace 14 mm. long, dorsal view.
4. Same, anterior part, ventral view.
5. Same, outer maxilliped.
Figures 3 to 5, after A. Milne Edwards.

PLATE 278

FIG. 1. *Parthenope* (*Pseudolambrus*) *triangula*, male, Cape St. Lucas, carapace 12 mm. long, chela, outer view.
2. Same, chela, inner view.
3. Same, dorsal view of entire animal.
Figures 1 to 3, after A. Milne Edwards.
4. *Parthenope* (*Platylambrus*) *guerini*, male, type, carapace 36 mm. long, dorsal view. After Brito Capello.

PLATE 279

After A. Milne Edwards

FIG. 1. *Solenolambrus typicus*, male, Florida Strait, carapace 8.5 mm. long, in profile.
2. Same, chela.
3. Same, anterior portion, ventral view.
4. Same, entire animal, dorsal view.
5. *Solenolambrus tenellus*, male, Barbados, carapace 6 mm. long, anterior portion, ventral view.
6. Same, chela.
7. Same, abdomen.
8. Same, entire animal, dorsal view.
9. Same, outer maxilliped.

PLATE 280

FIG. 1. *Mesorhoea bellii*, Mexico, carapace 13 mm. long, anterior part, ventral view. (The palps of the maxillipeds should not show.)
2. Same, chela and carpus.
3. Same, carapace in profile.
4. Same, entire animal, dorsal view.
Figures 1 to 4, after A. Milne Edwards.
5. *Thyrolambrus astroides*, female, Andaman Sea, carapace about 18 mm. long, anterior part, ventral view.
6. Same, entire animal, dorsal view.
Figures 5 and 6, after Alcock.

PLATE 281

After Rathbun

FIG. 1. *Leiolambrus nitidus*, male (23776), carapace 6.4 mm. long, dorsal view.
2. *Thyrolambrus erosus*, female (21577), carapace 18.4 mm. long, dorsal view.

PLATE 282

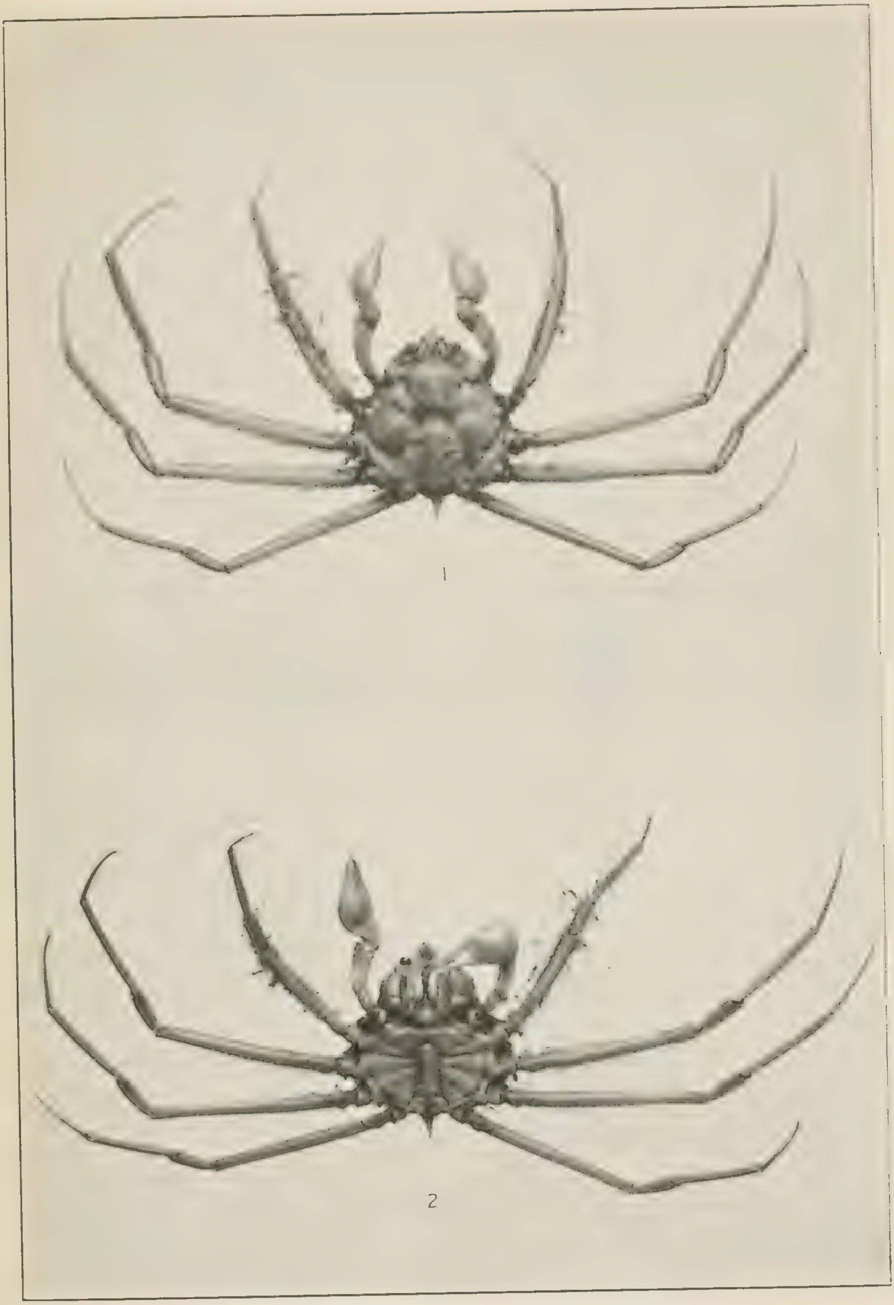
After A. Milne Edwards

FIG. 1. *Heterocrypta granulata*, Charleston, carapace 8.3 mm. long, male abdomen.
2. Same species and locality, anterior part, ventral view.
3. Same, entire animal, dorsal view.
4. *Heterocrypta macrobrachia*, Panama, carapace 10.8 mm. long, entire animal, dorsal view.
5. Same, anterior part, ventral view.
6. *Cryptopodia concava*, male, Florida, carapace 8.7 mm. long, dorsal view.
7. Same, ventral view.
8. Same, outer maxilliped.
9. *Cryptopodia concava*, female, Florida, carapace 10 mm. long, dorsal view.
10. Same, chela, outer view.
11. Same, entire animal, ventral view.

PLATE 283

Halicarcinus planatus

FIGS. 1–7. Specimen from Falkland Islands, carapace 7 mm. long. After Stebbing.
1. Rostrum.
2. Mandible.
3. Second maxilla.
4. First maxilliped.
5. Second maxilliped.
6. Third maxilliped.
7. Dactylus of an ambulatory leg, and end of same still more enlarged.
8. Abdomen of male (18209) ×5.



DASYGYIUS DEPRESSUS. (PAGE 138)

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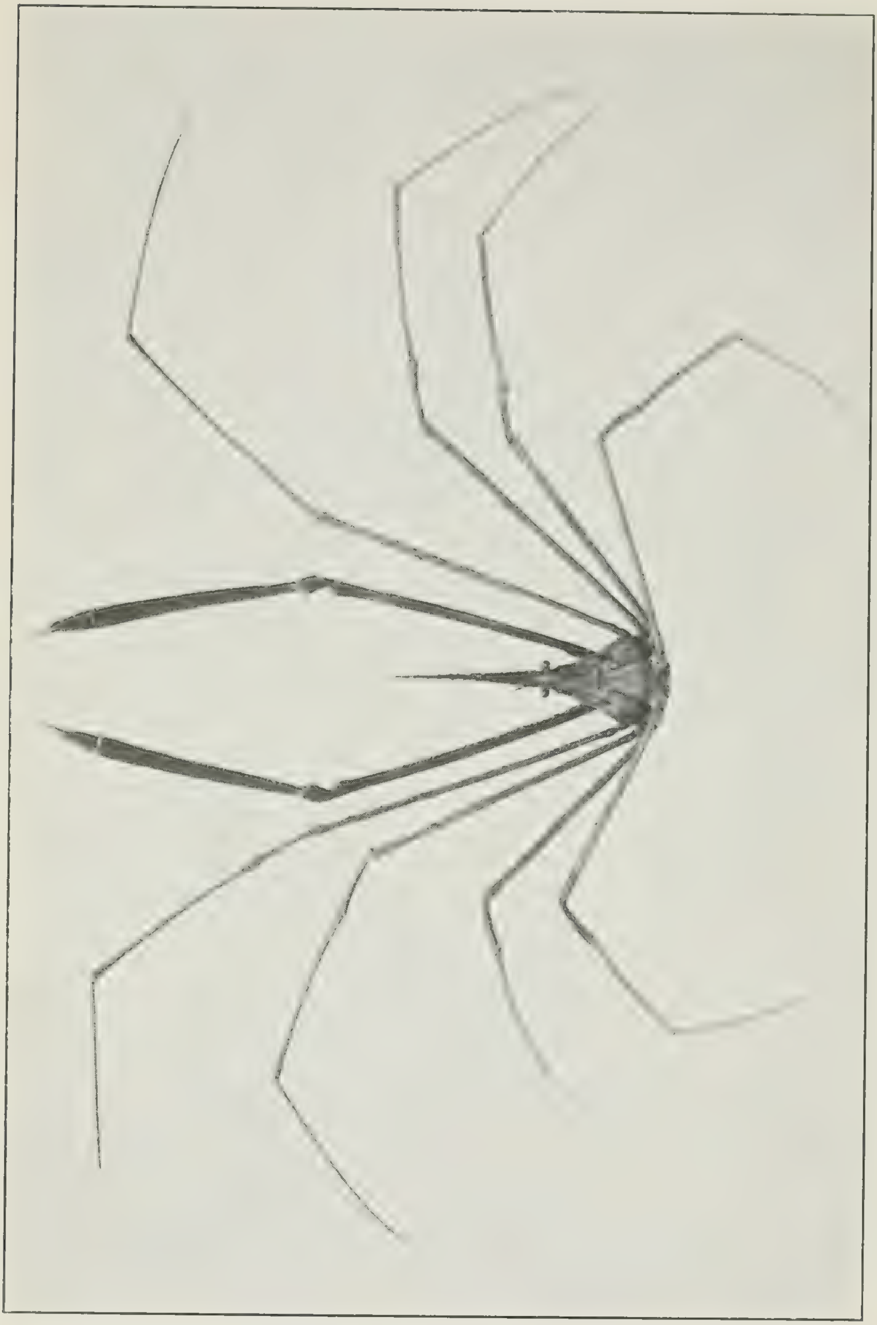

STENORYNCHUS SETICORNIS. (PAGE 13)

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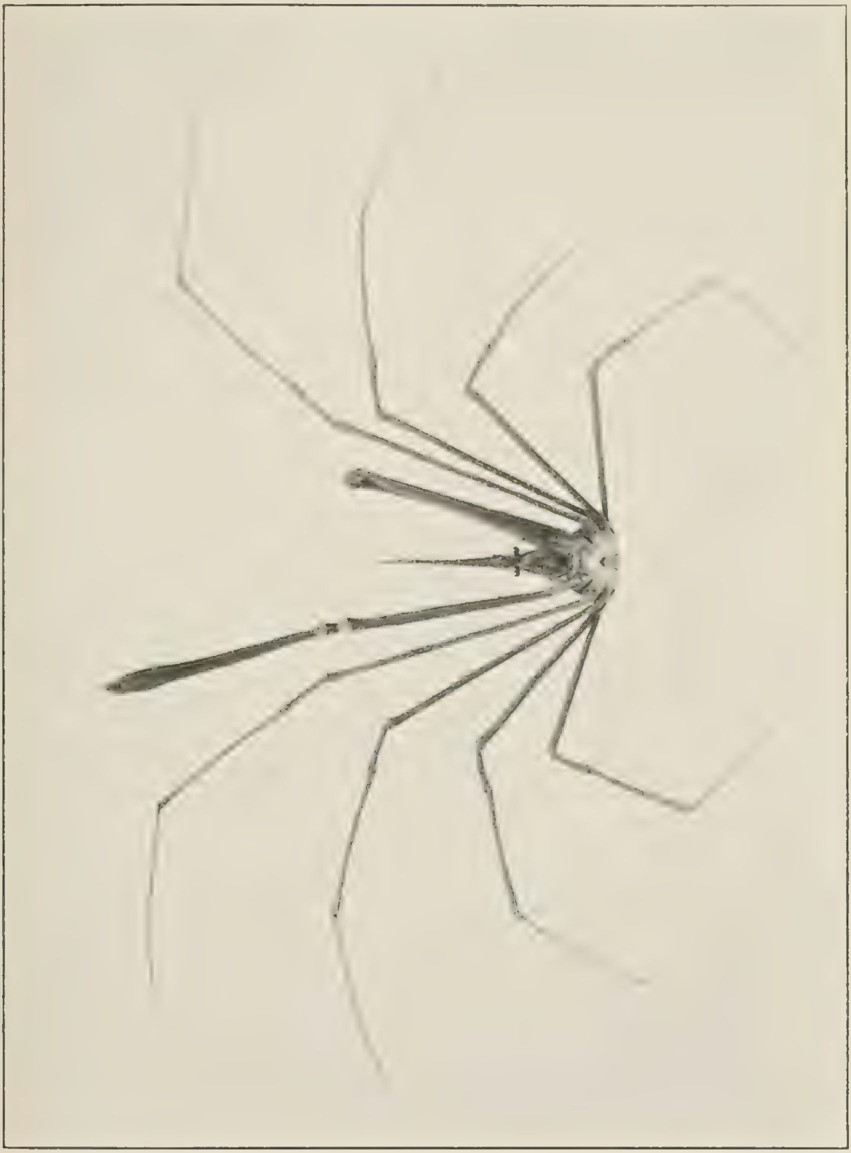

STENORYNCHUS SETICORNIS. (PAGE 13)

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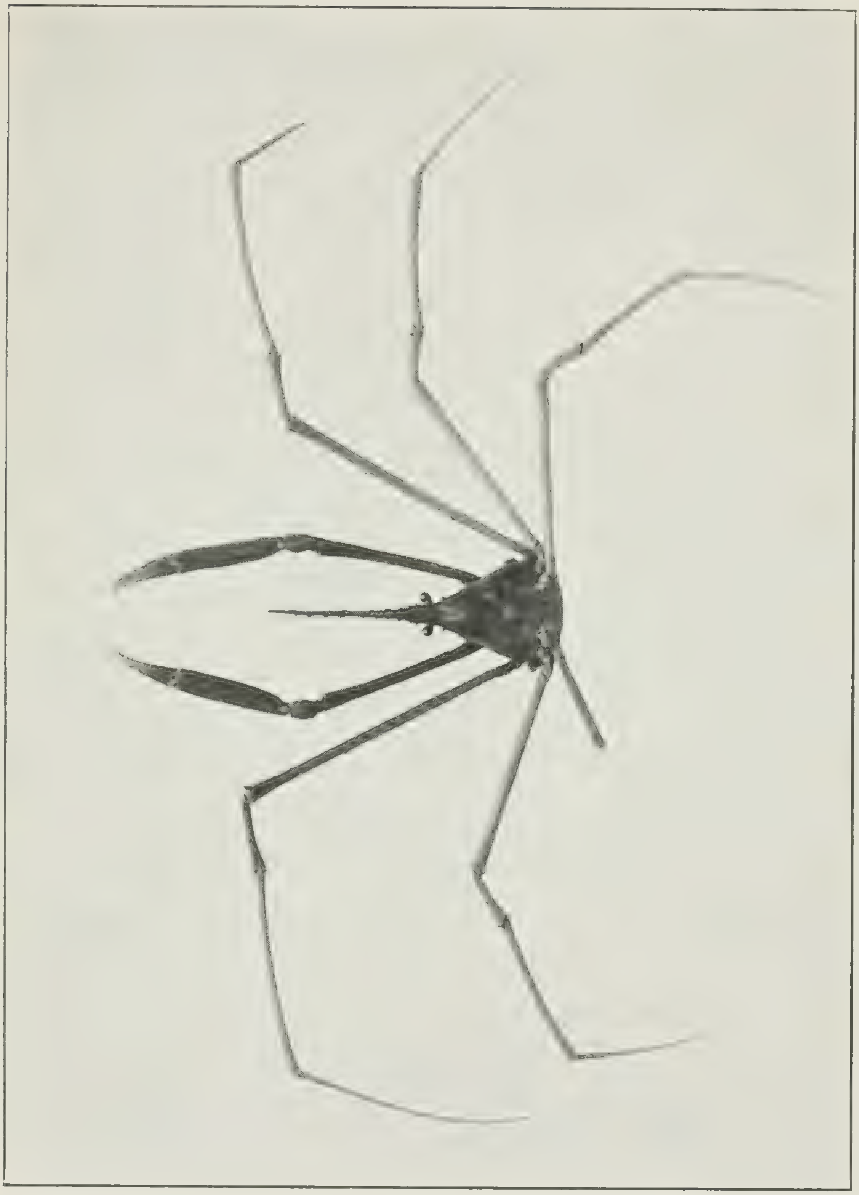

STENORYNCHUS DEBILIS. (PAGE 18)

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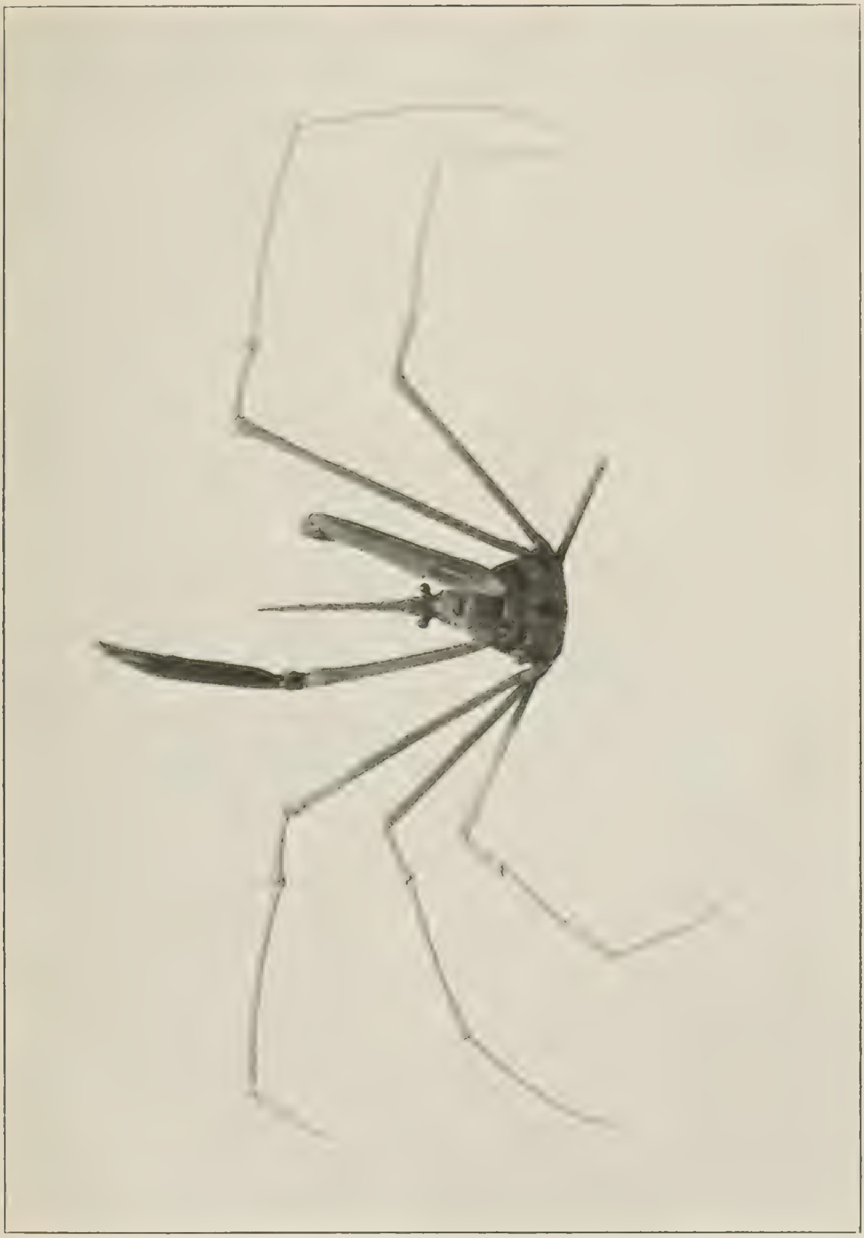

STENORYNCHUS DEBILIS. (PAGE 18)

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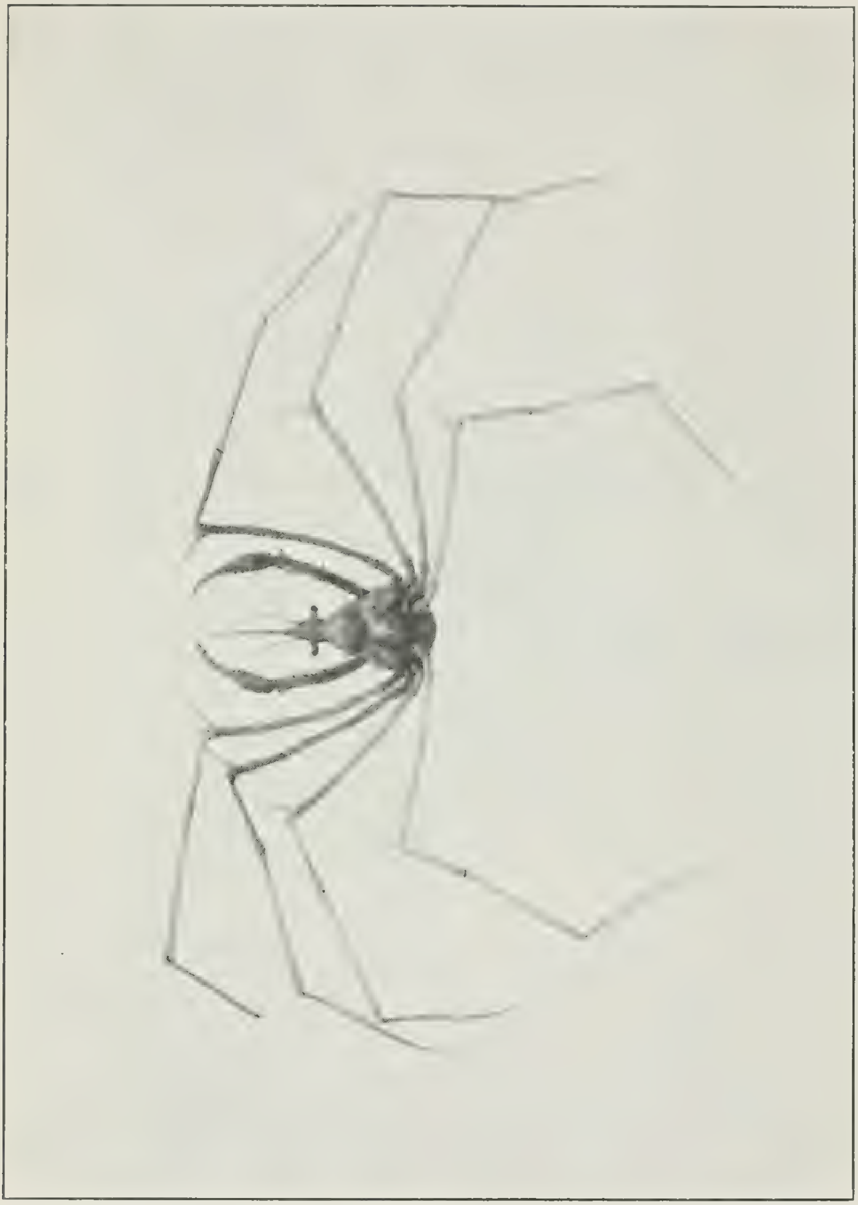

METOPORHAPHIS CALCARATA. (PAGE 21)

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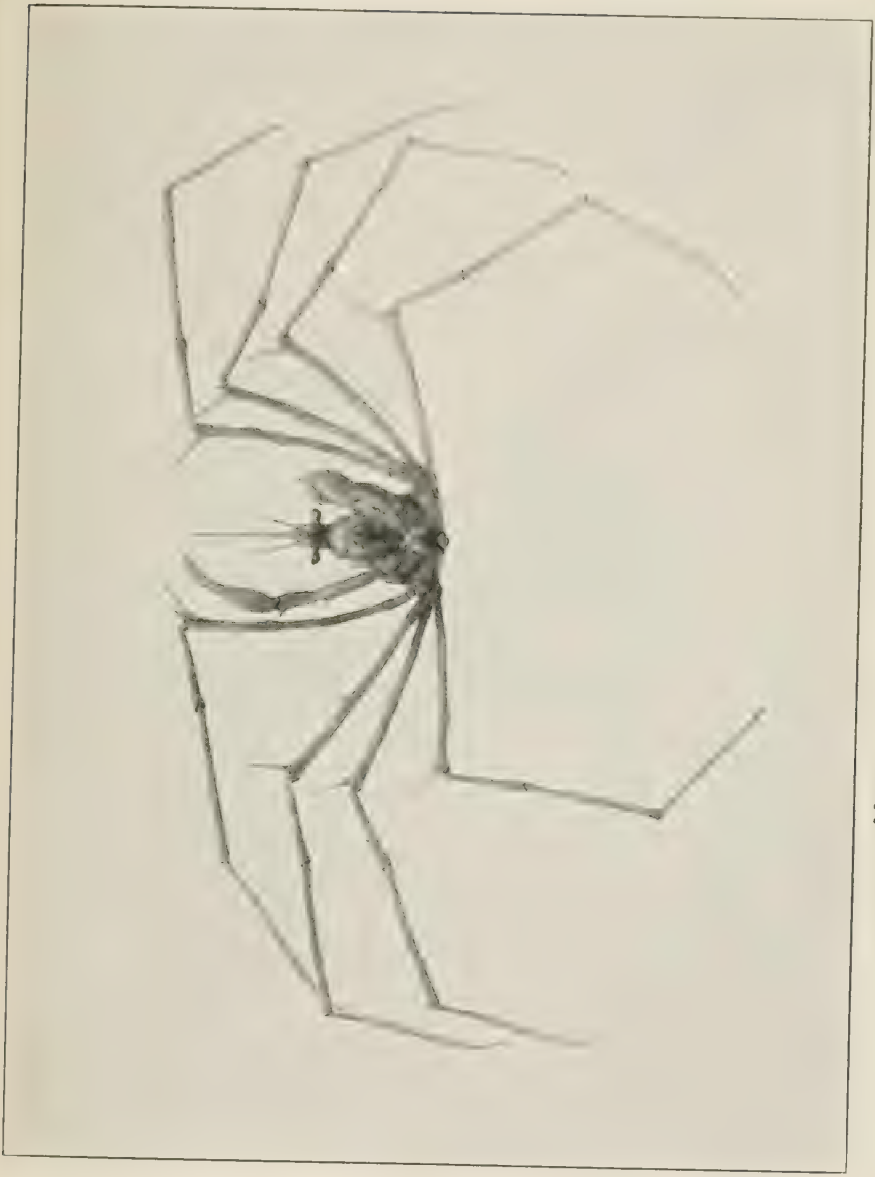

METOPORHAPHIS CALCARATA. (PAGE 21)

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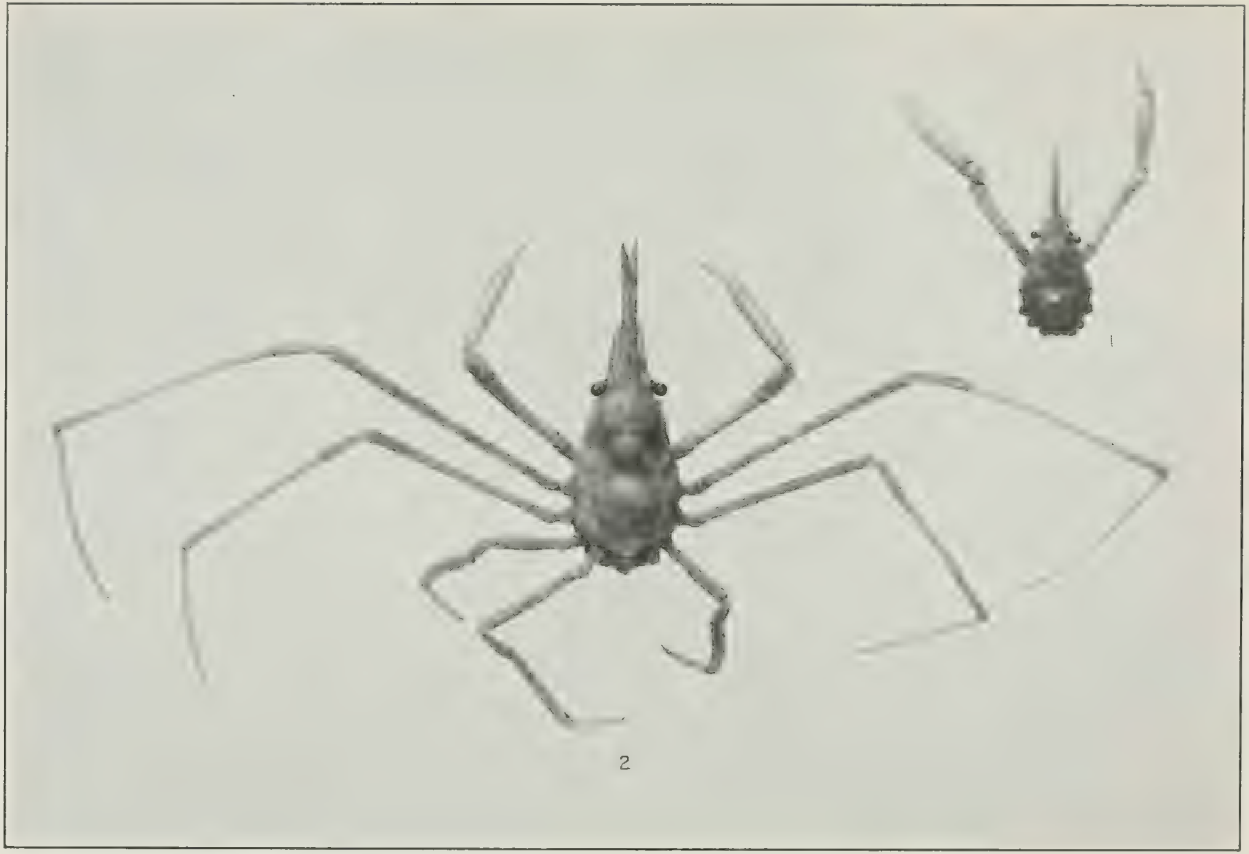
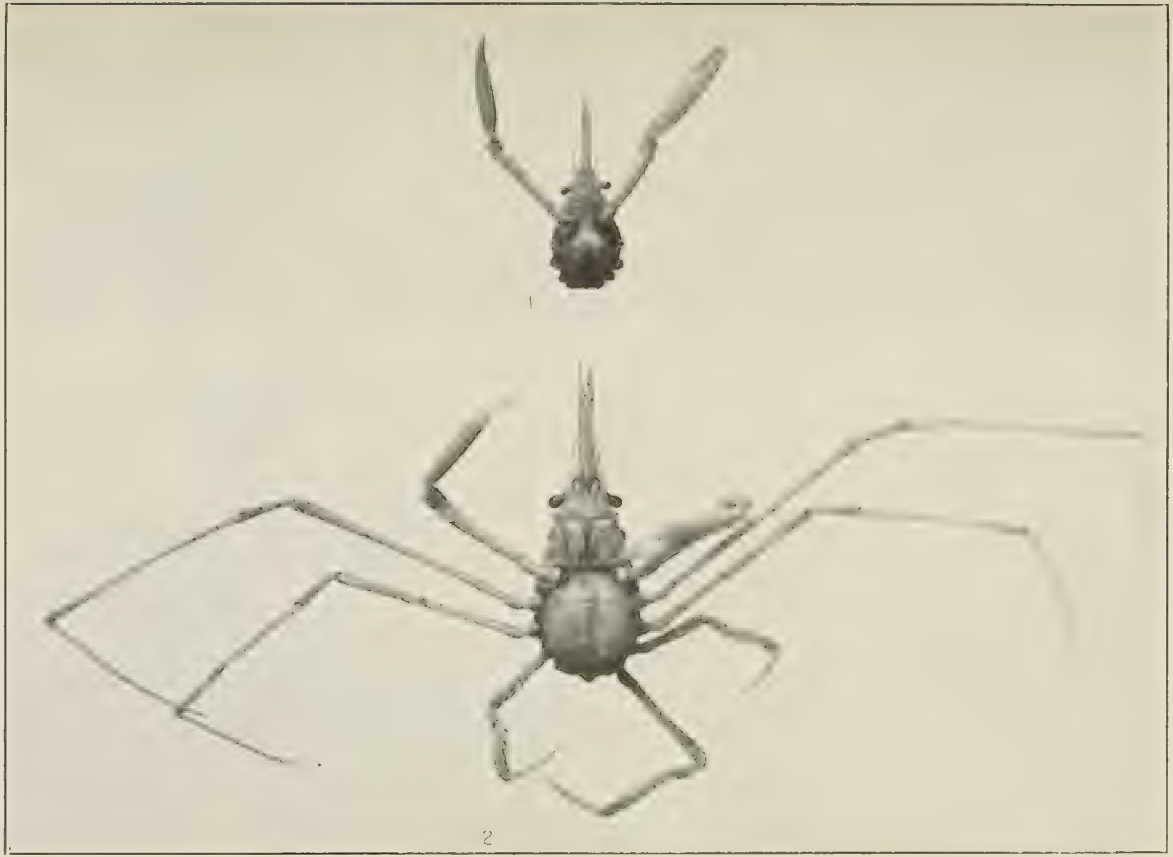


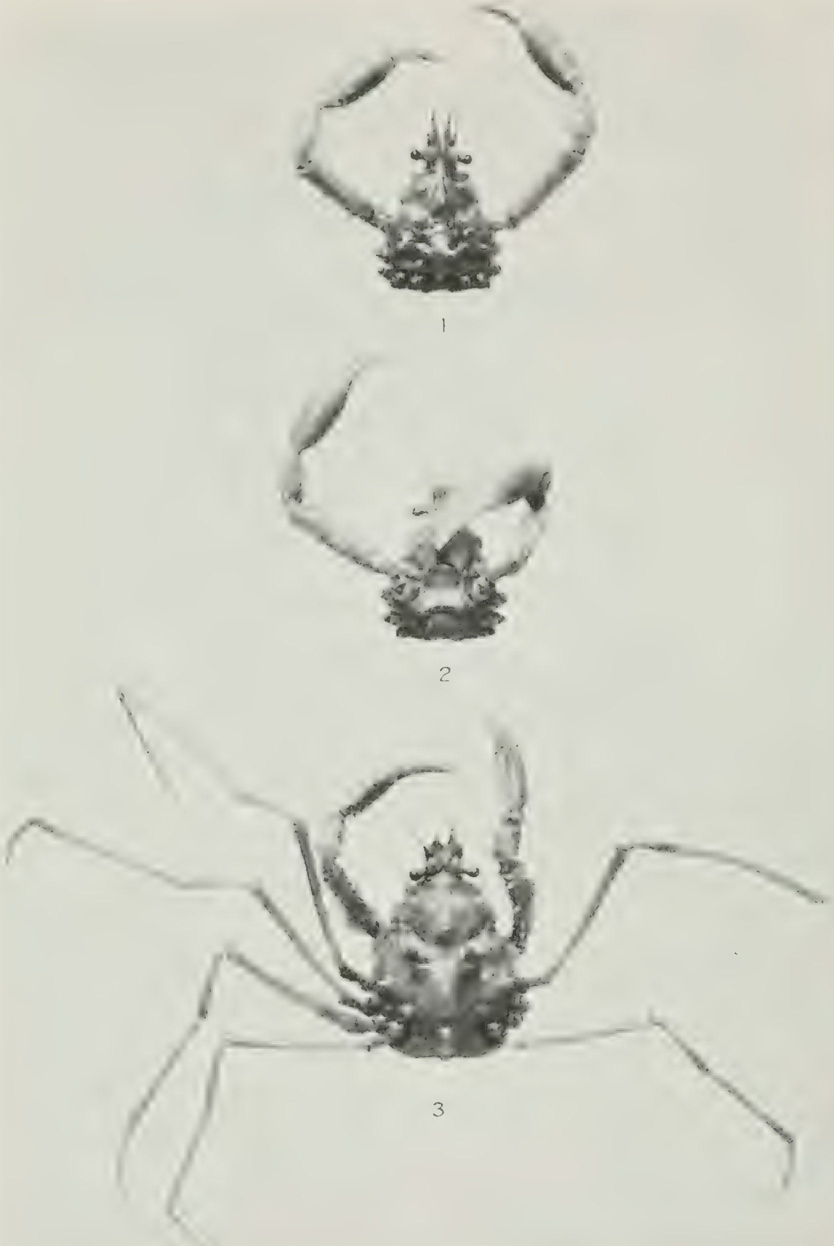
1. ANOMALOTHIR FRONTALIS. (PAGE 25.) 2. A. FURCILLATUS. (PAGE 24)

FOR EXPLANATION OF PLATE SEE PAGE 565



1. Anomalothir frontalis. (Page 25.) 2. A. furcillatus. (Page 24)

For explanation of plate see page 565



ACHAEOPSIS THOMSONI. (PAGE 29)

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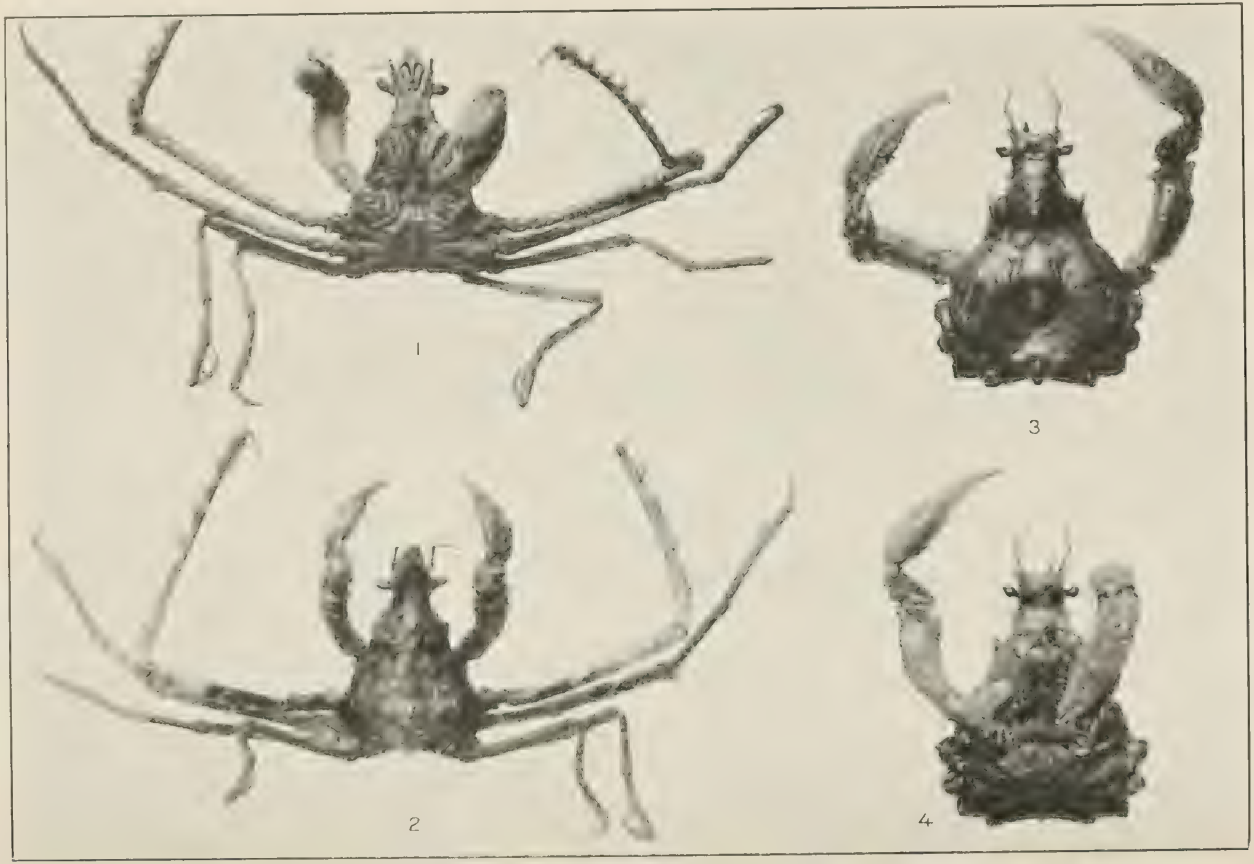

1, 2. PODOCHELA RIISEI. (PAGE 33.) 3, 4. P. LOBIFRONS. (PAGE 57)

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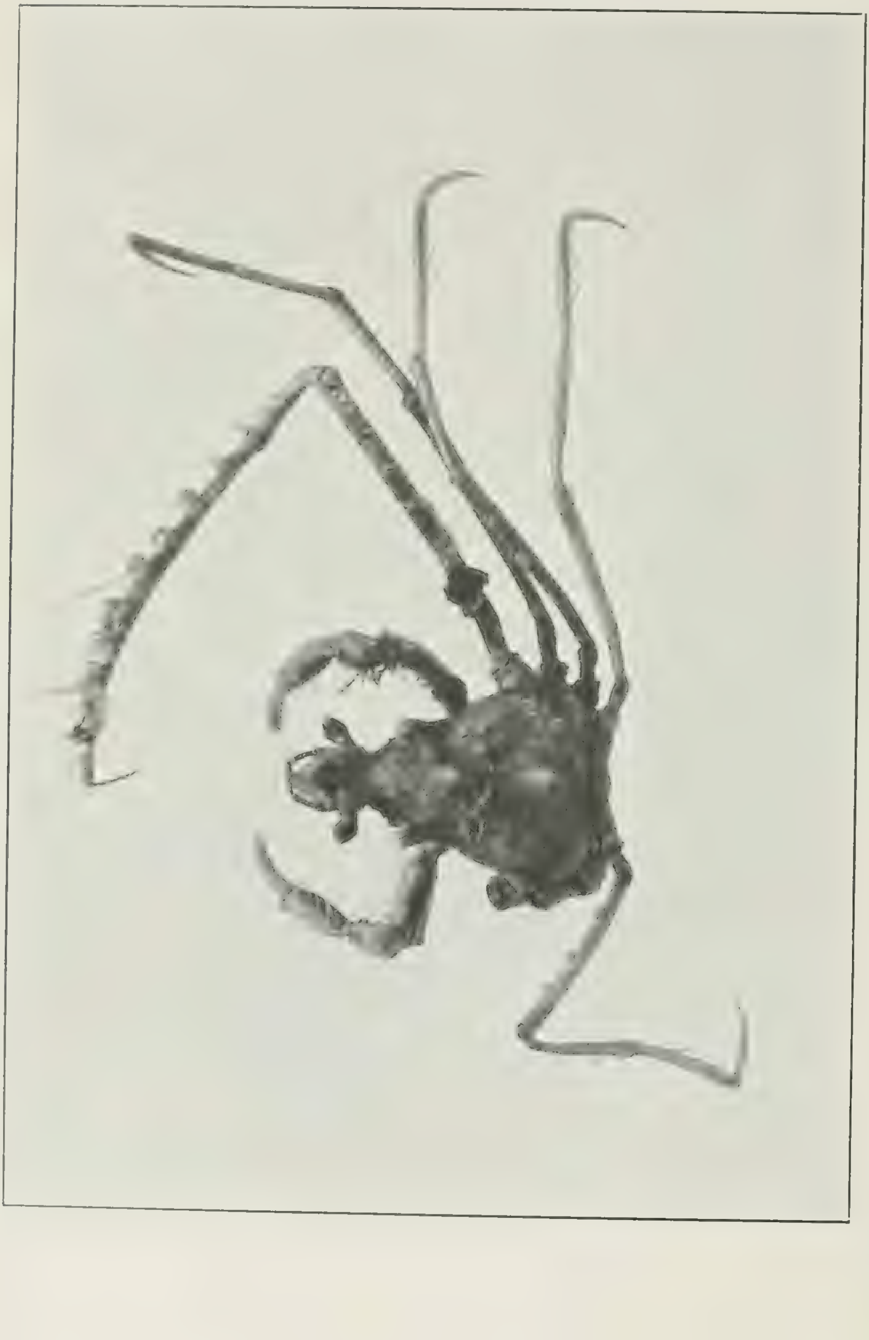

PODOCHELA SIDNEYI. (PAGE 39)

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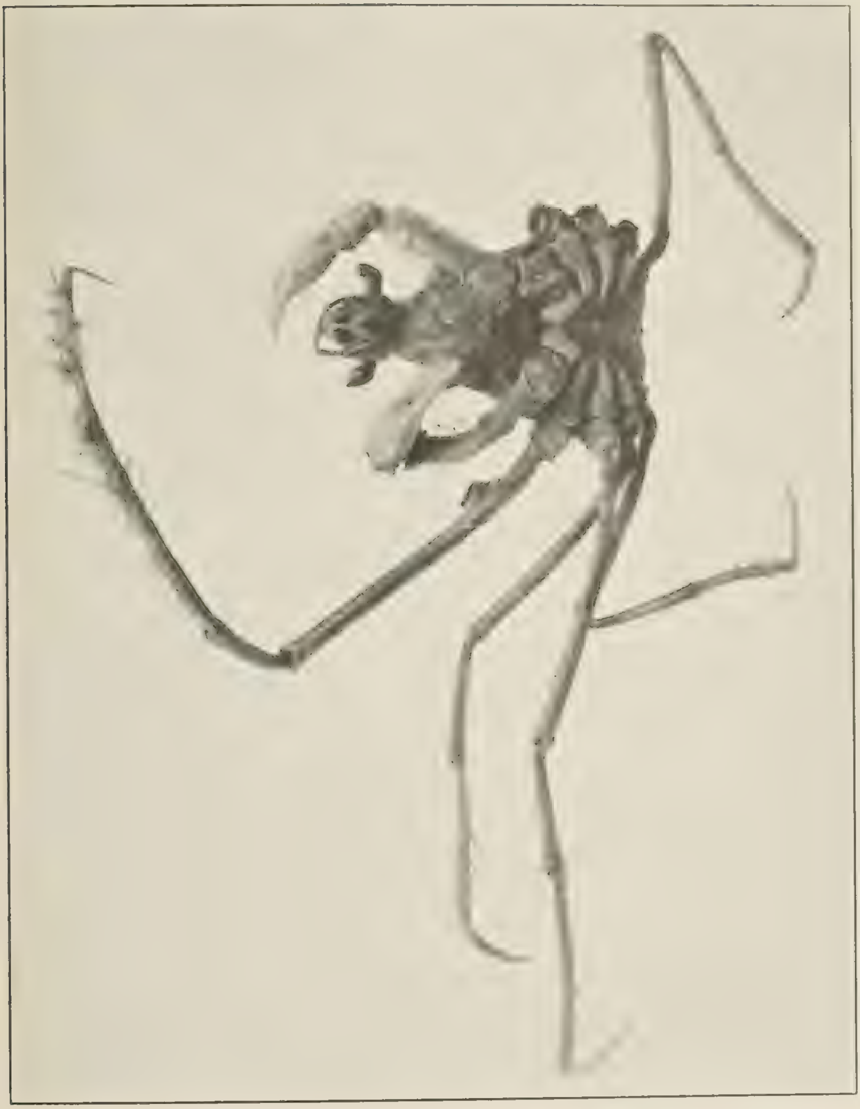

PODOCHELA SIDNEYI. (PAGE 38)

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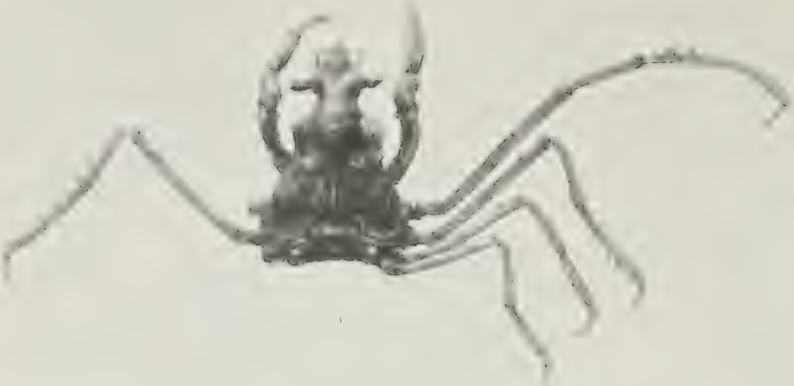

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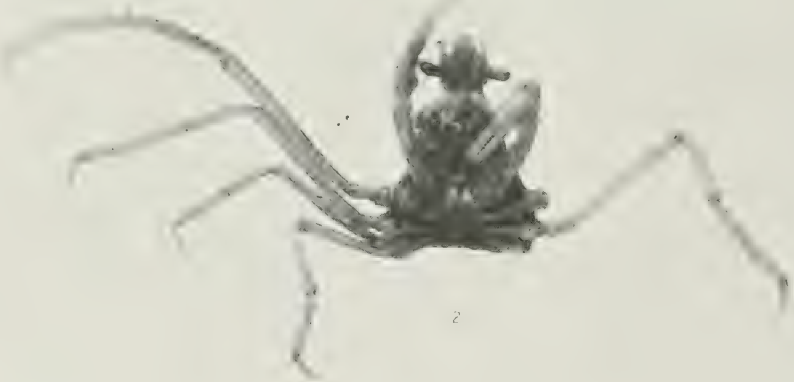

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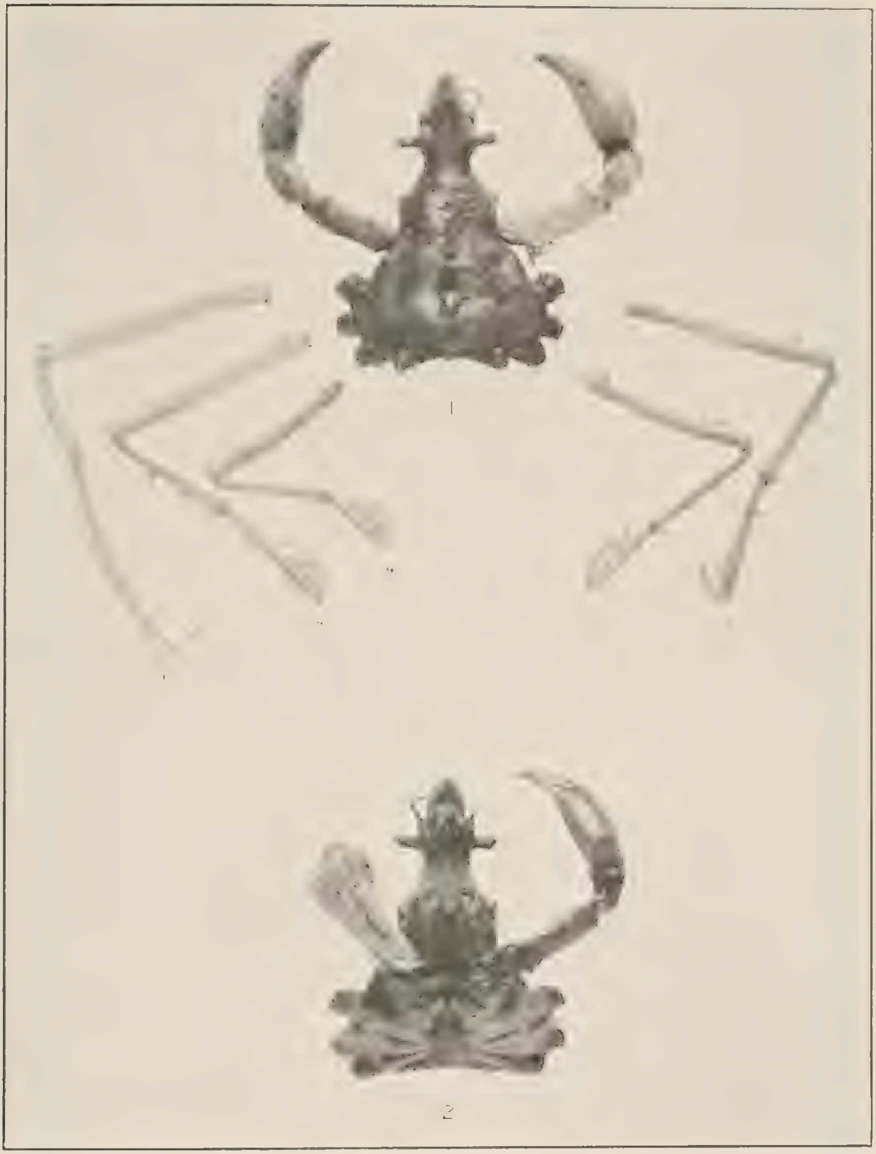
Podochela vestita. (Page 42)

For explanation of plate see page 566



PODOCHELA MARGARITARIA. (PAGE 43)

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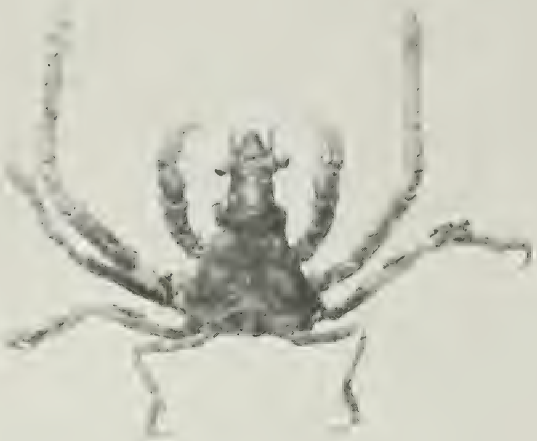

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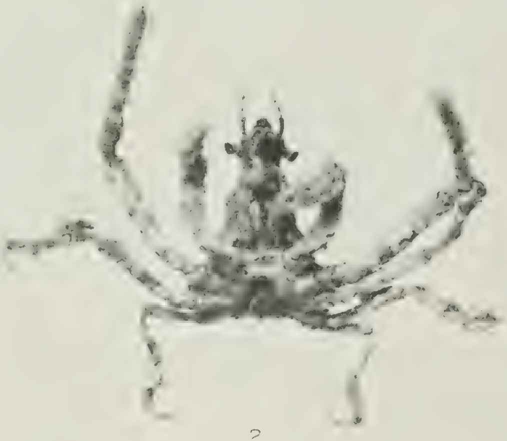

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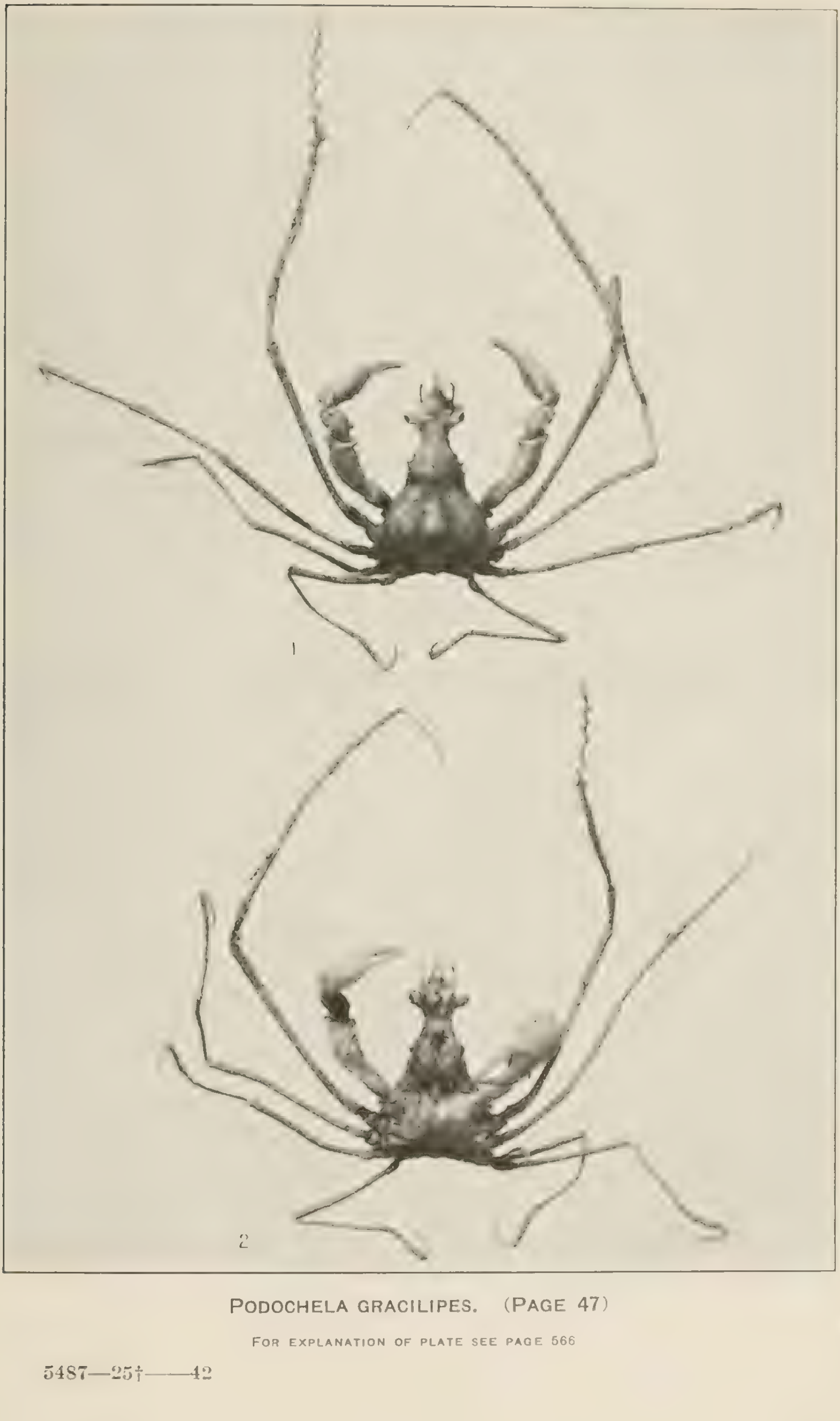
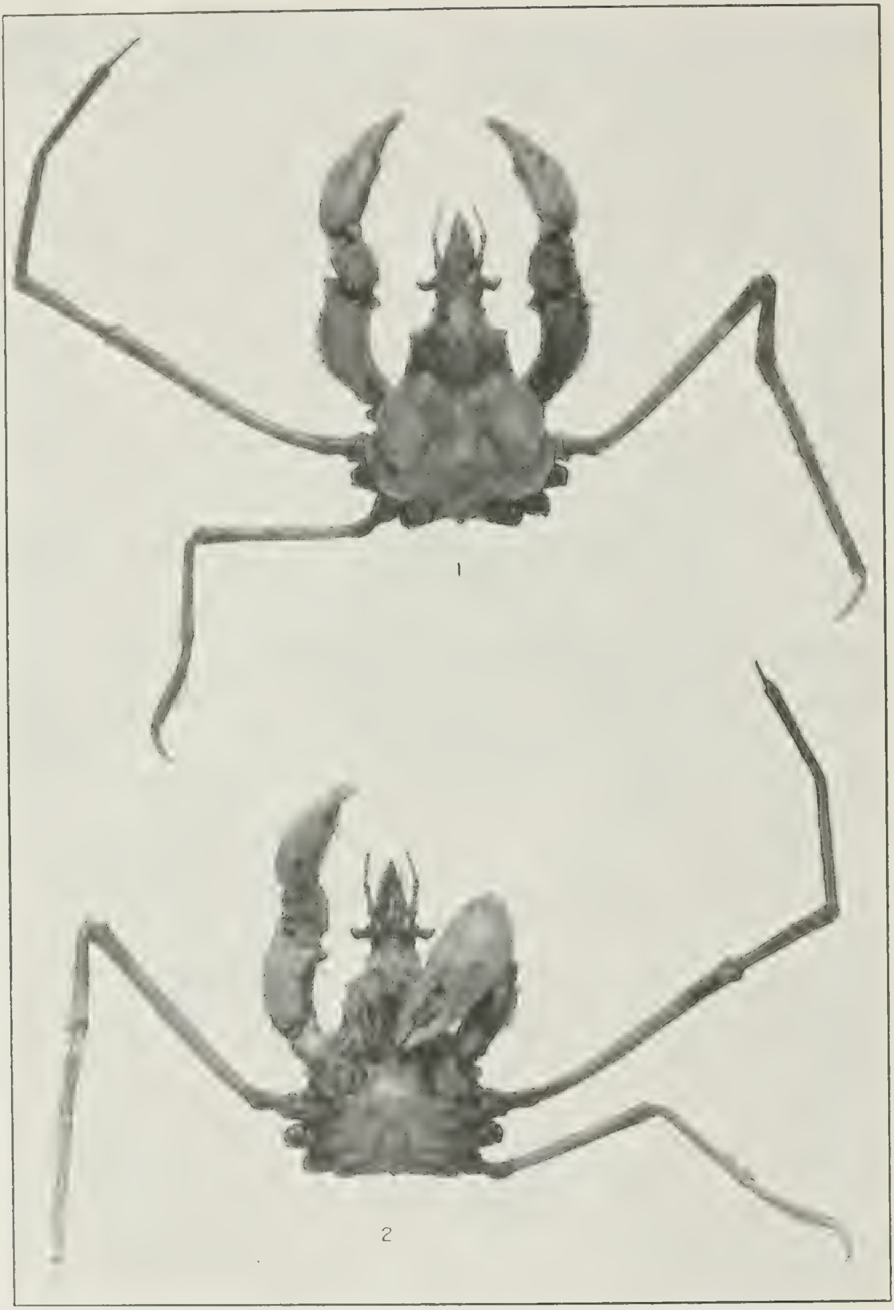
Podochela macrodera. (Page 44)

For explanation of plate see page 566



Podochela gracilipes. (Page 47)

For explanation of plate see page 566



PODOCHELA HEMPHILLII. (PAGE 49)

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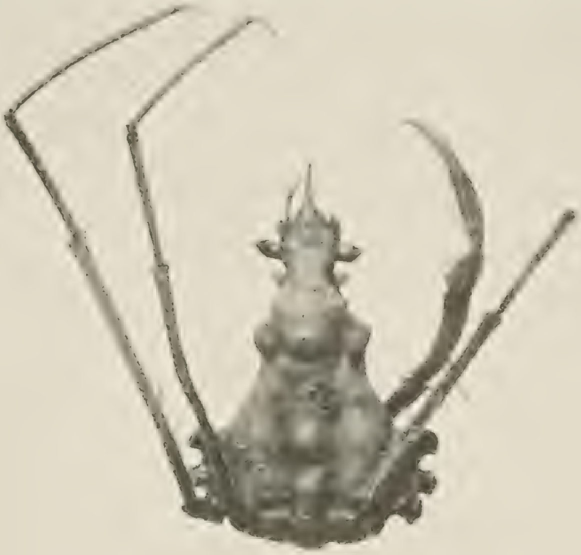

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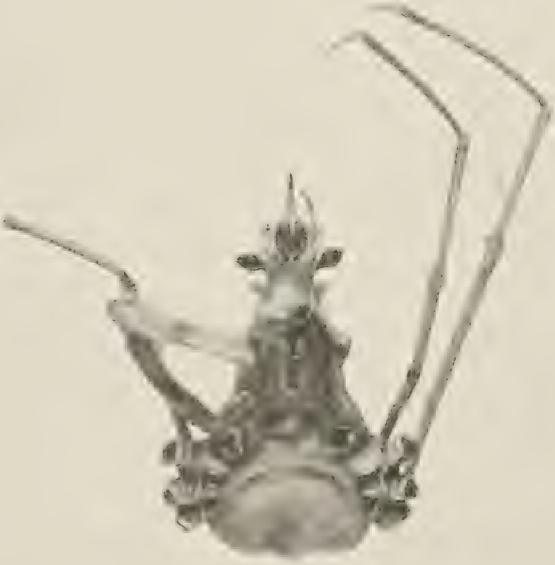

PODOCHELA CURVIROSTRIS. (PAGE 50)

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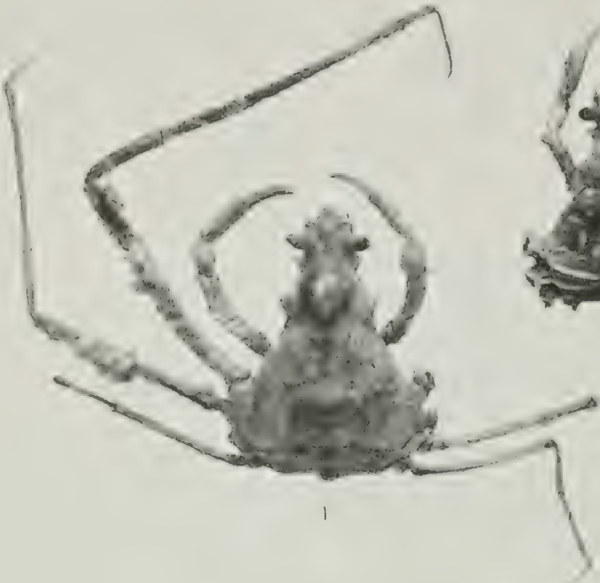

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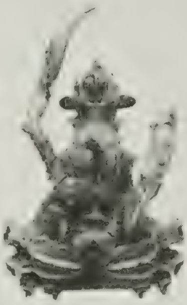

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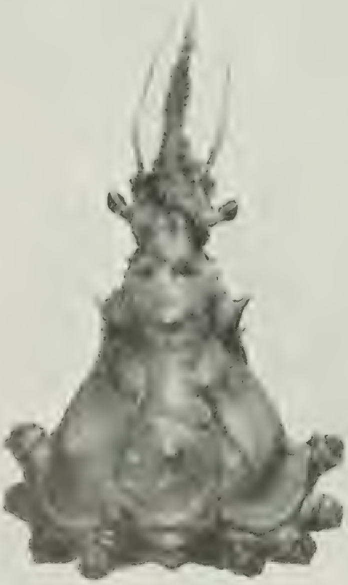

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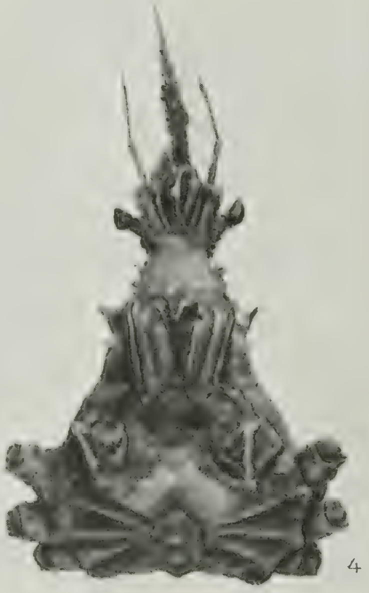

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1, 2. PODOCHELA LAMELLIGERA. (PAGE 52.) 3, 4. P. BARBARENSIS. (PAGE 54)

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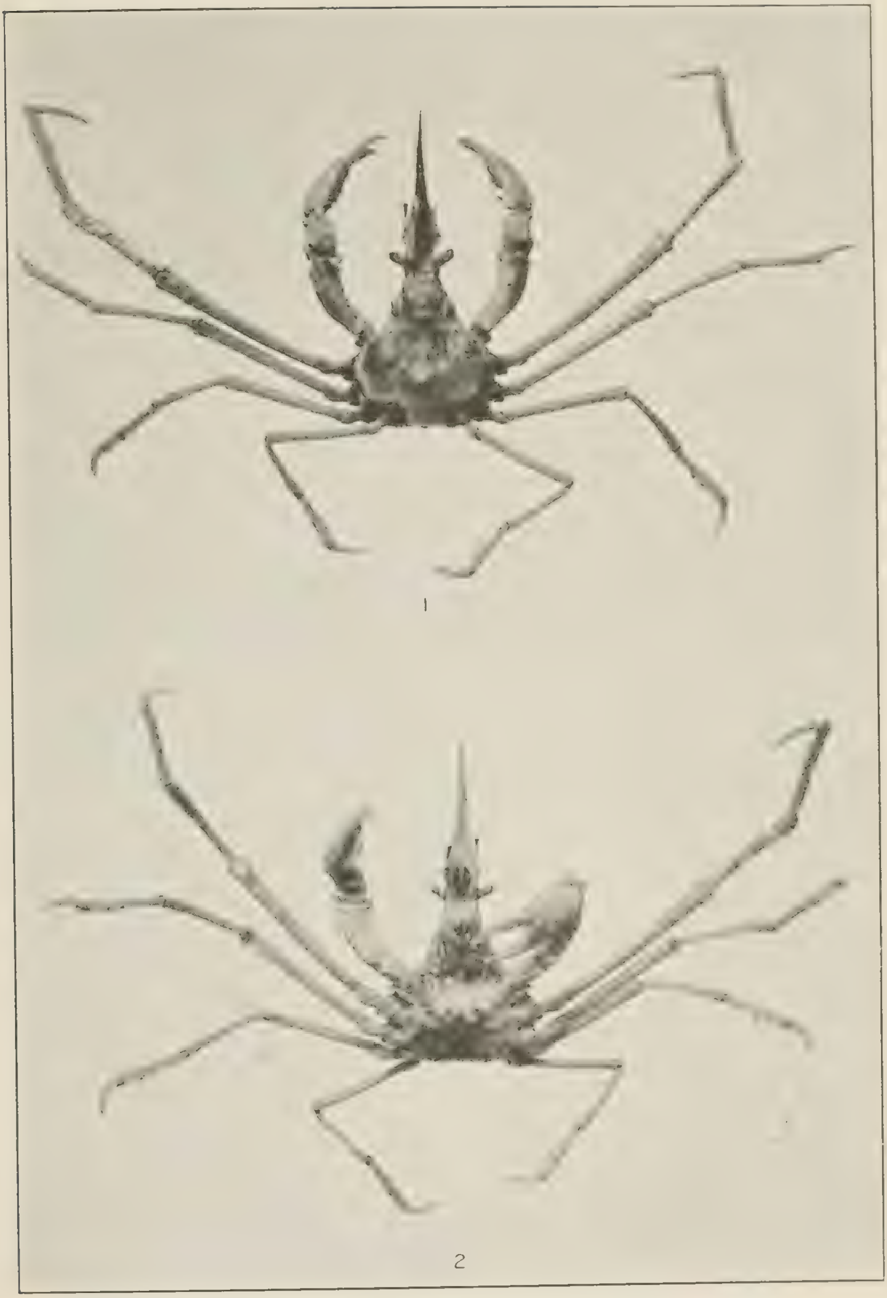
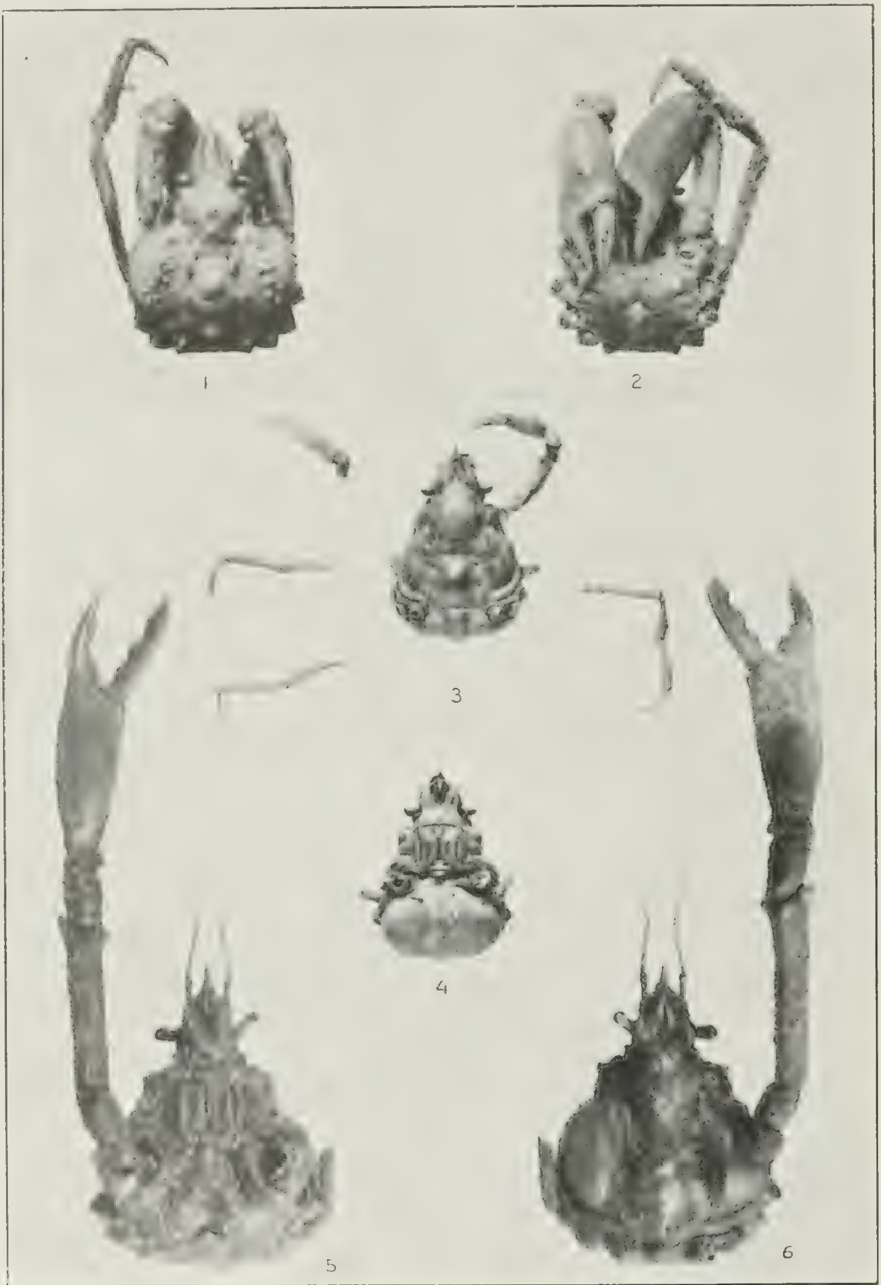


Podochela latimanus. (Page 56)

For explanation of plate see page 567



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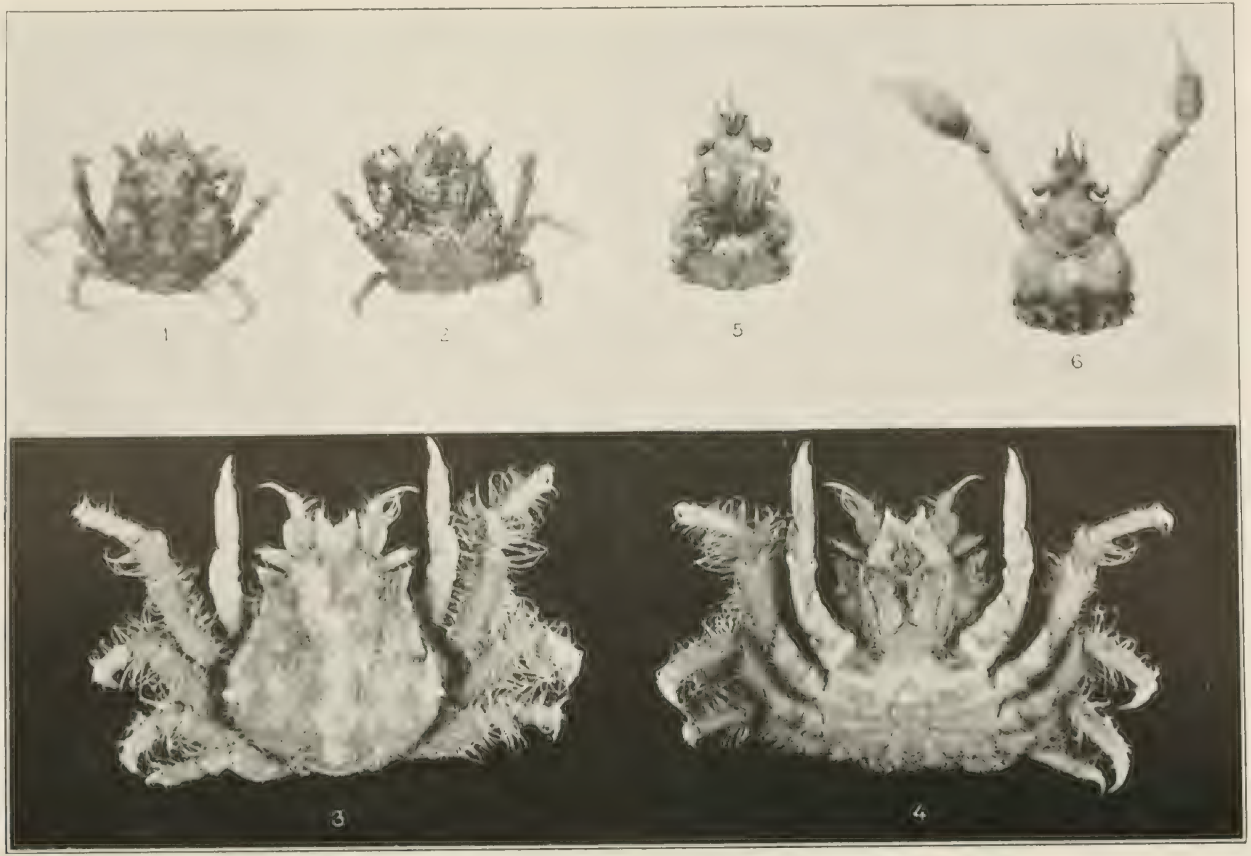

1, 2. EUCINETOPS BLAKIANA. (PAGE 88.) 3, 4. E. PANAMENSIS. (PAGE 87.) 5, 6. ANASIMUS FUGAX. (PAGE 64)

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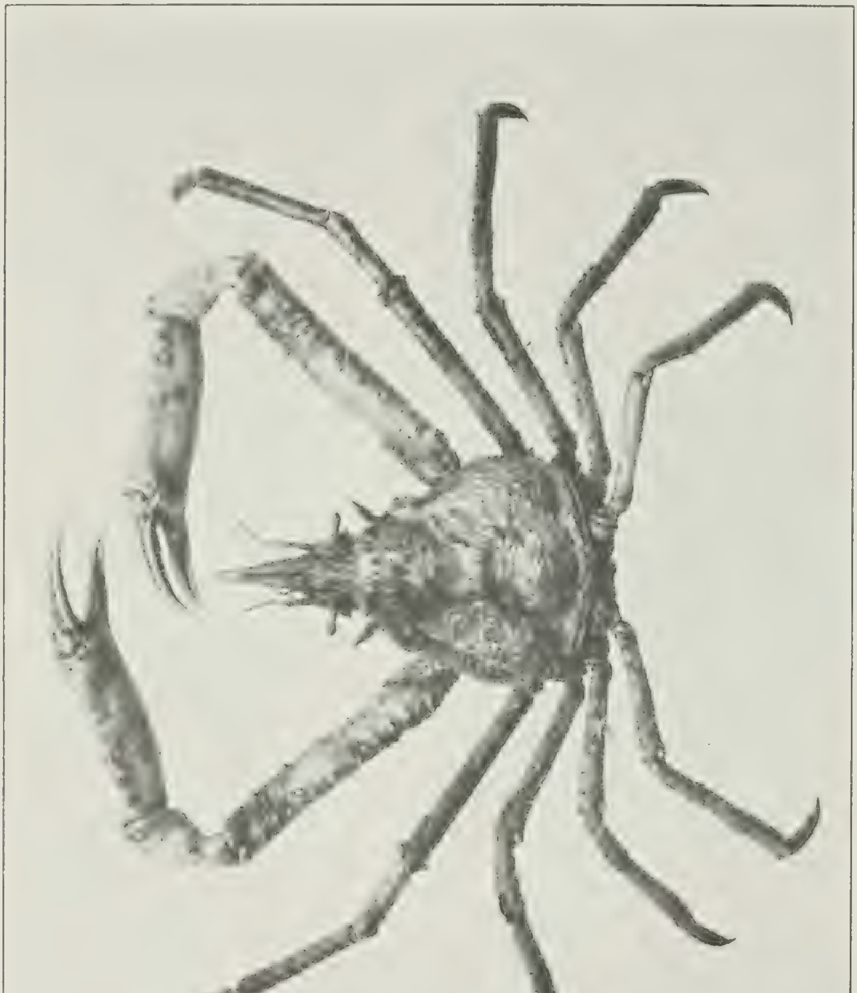

OREGONIA GRACILIS. (PAGE 71)

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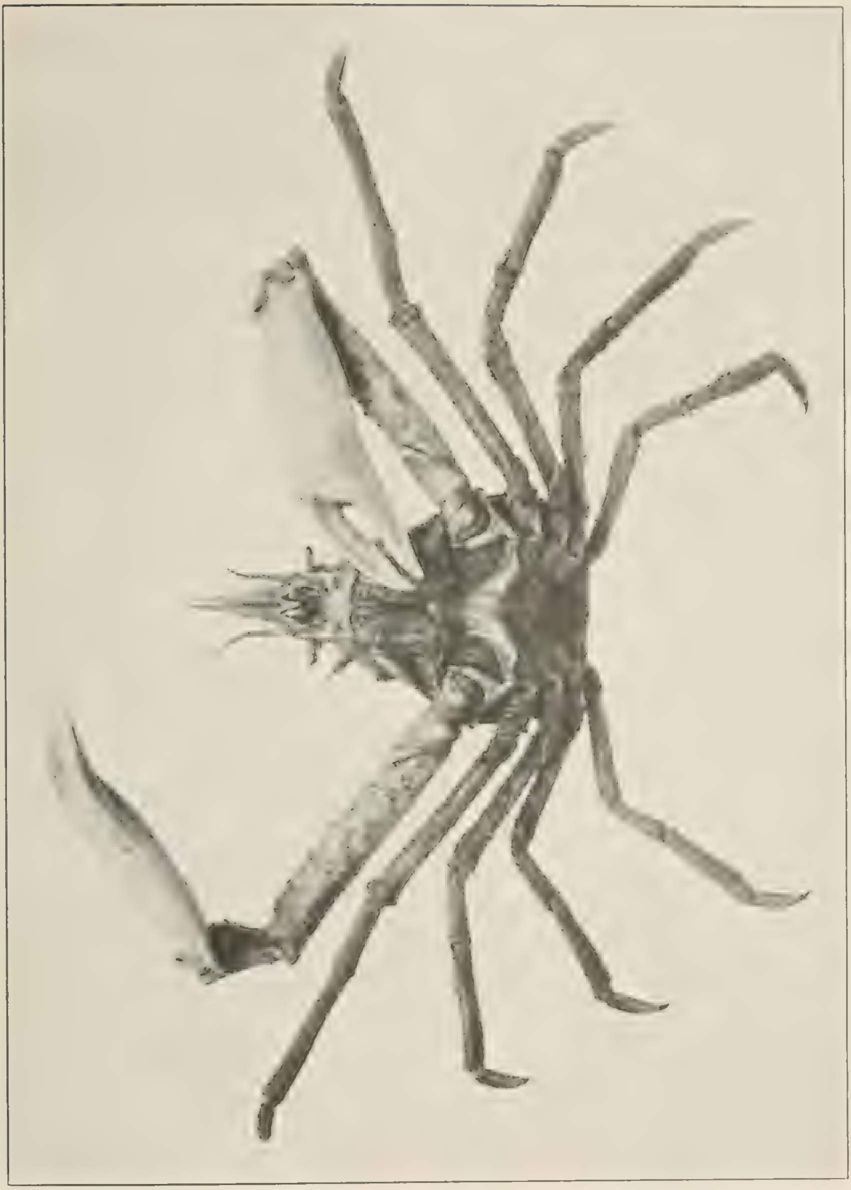

OREGONIA GRACILIS. (PAGE 71)

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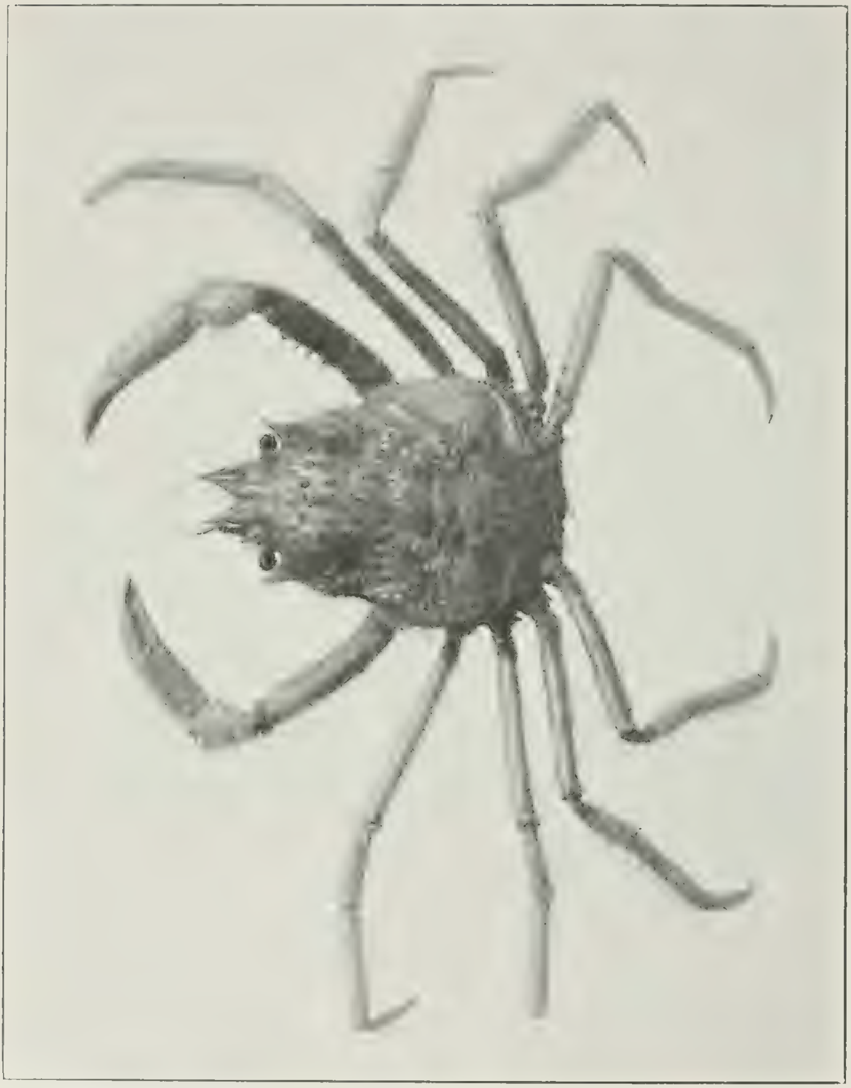

OREGONIA BIFURCA. (PAGE 79)

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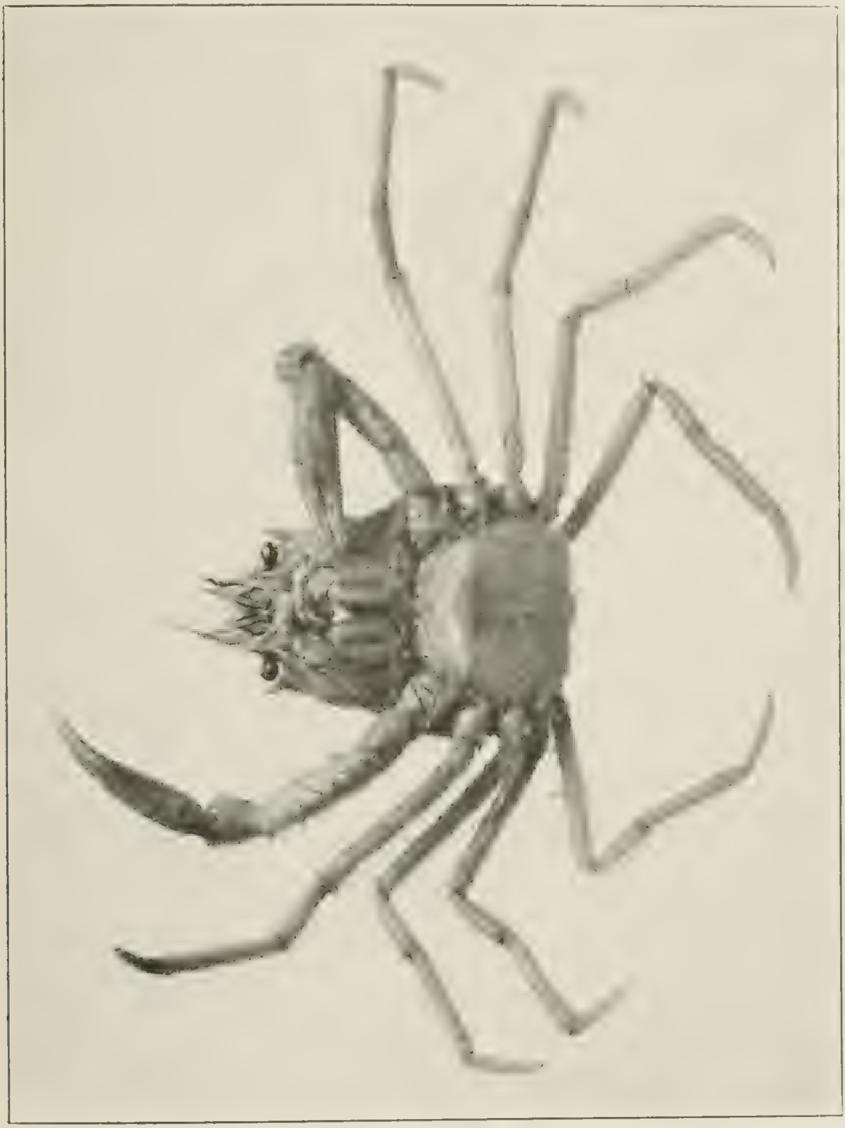
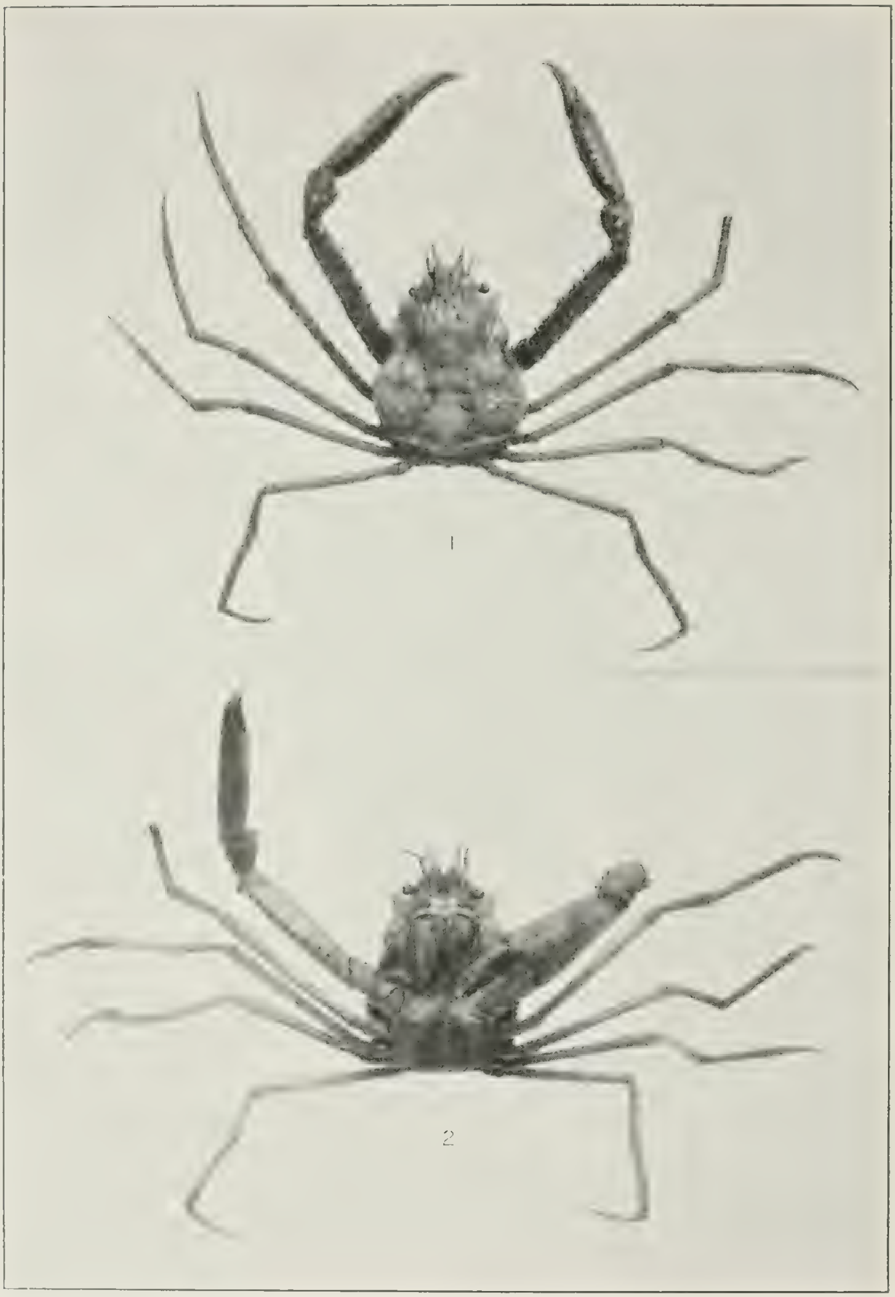


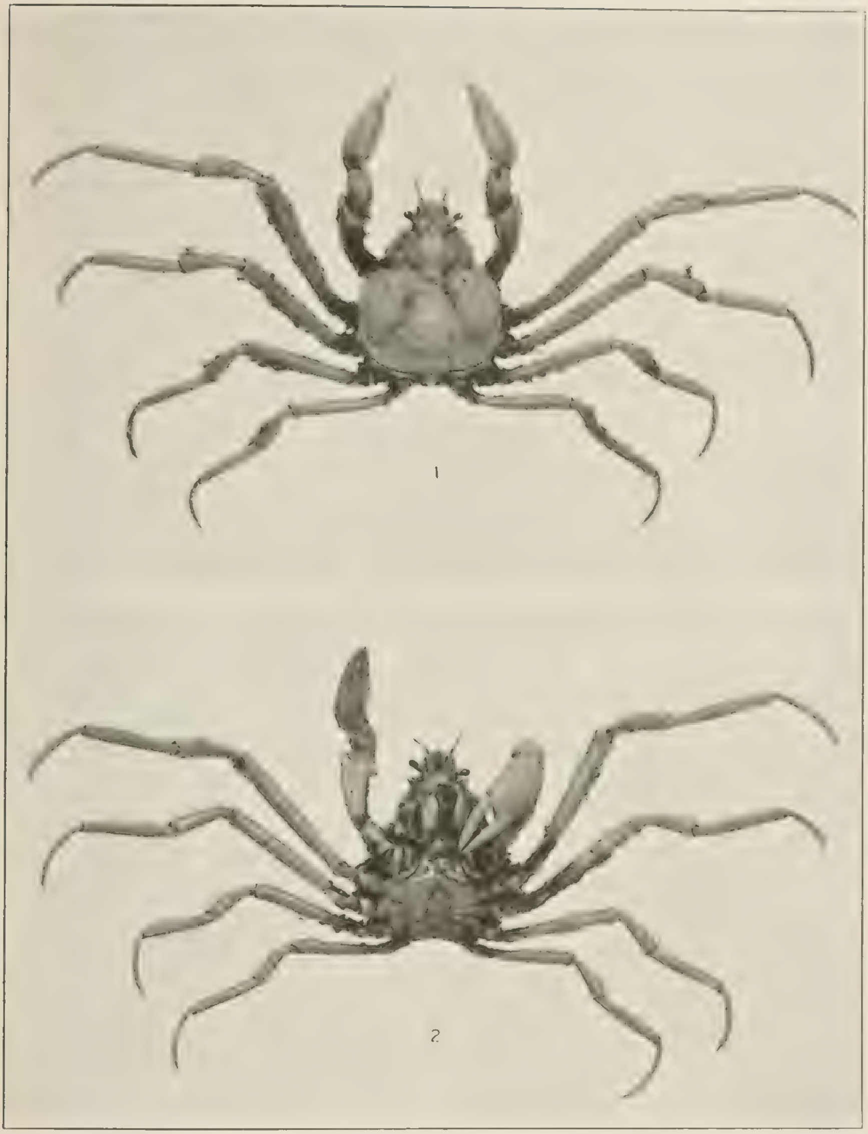
Oregonia bifurca. (Page 79)

For explanation of plate see page 567



Oregonia bifurca. (Page 79)

For explanation of plate see page 567



COLLODES ROBUSTUS. (PAGE 114)

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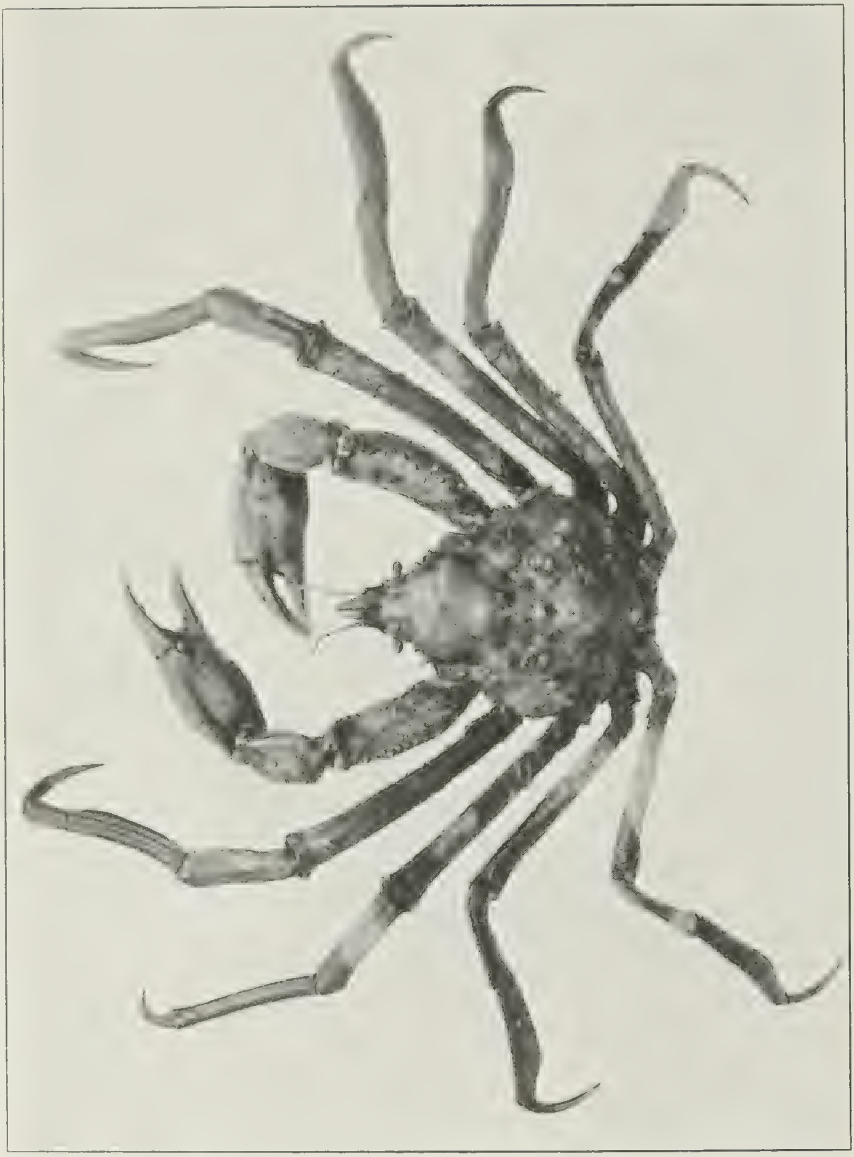

EURYPODIUS LATREILLII. (PAGE 80)

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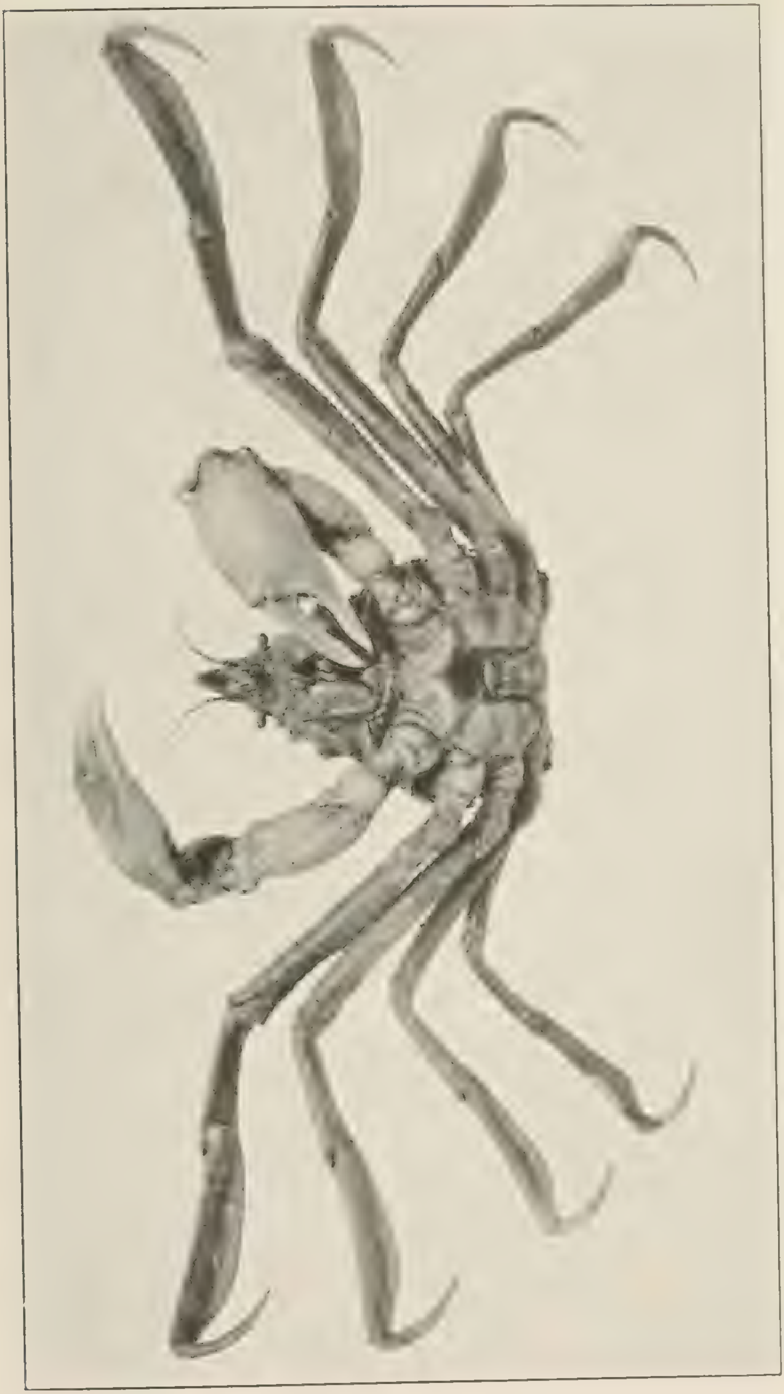
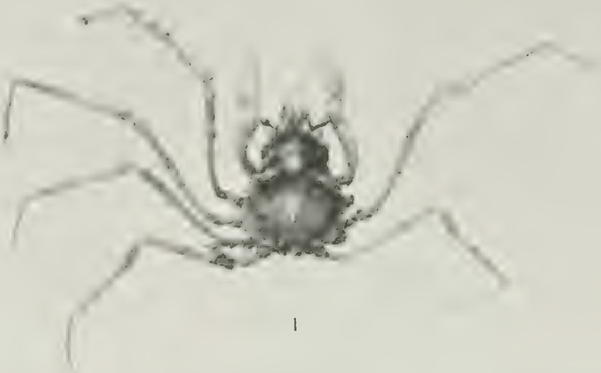


Eurypodius latreillii. (Page 80)

For explanation of plate see page 563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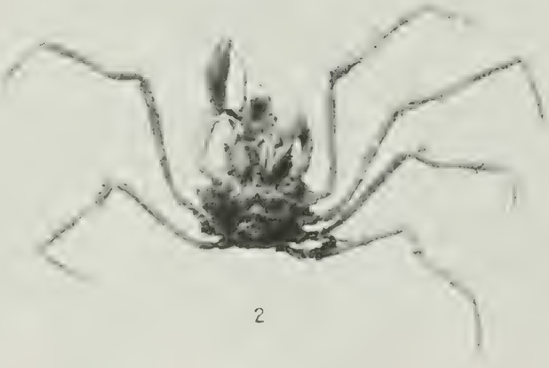
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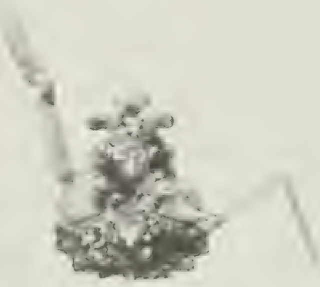
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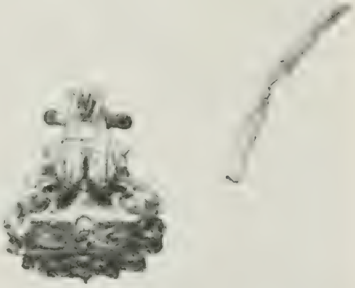
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1, 2. ARACHNOPSIS FILIPES. (PAGE 89.) 3, 4. AEPINUS SEPTEMSPINOSUS. (PAGE 92)

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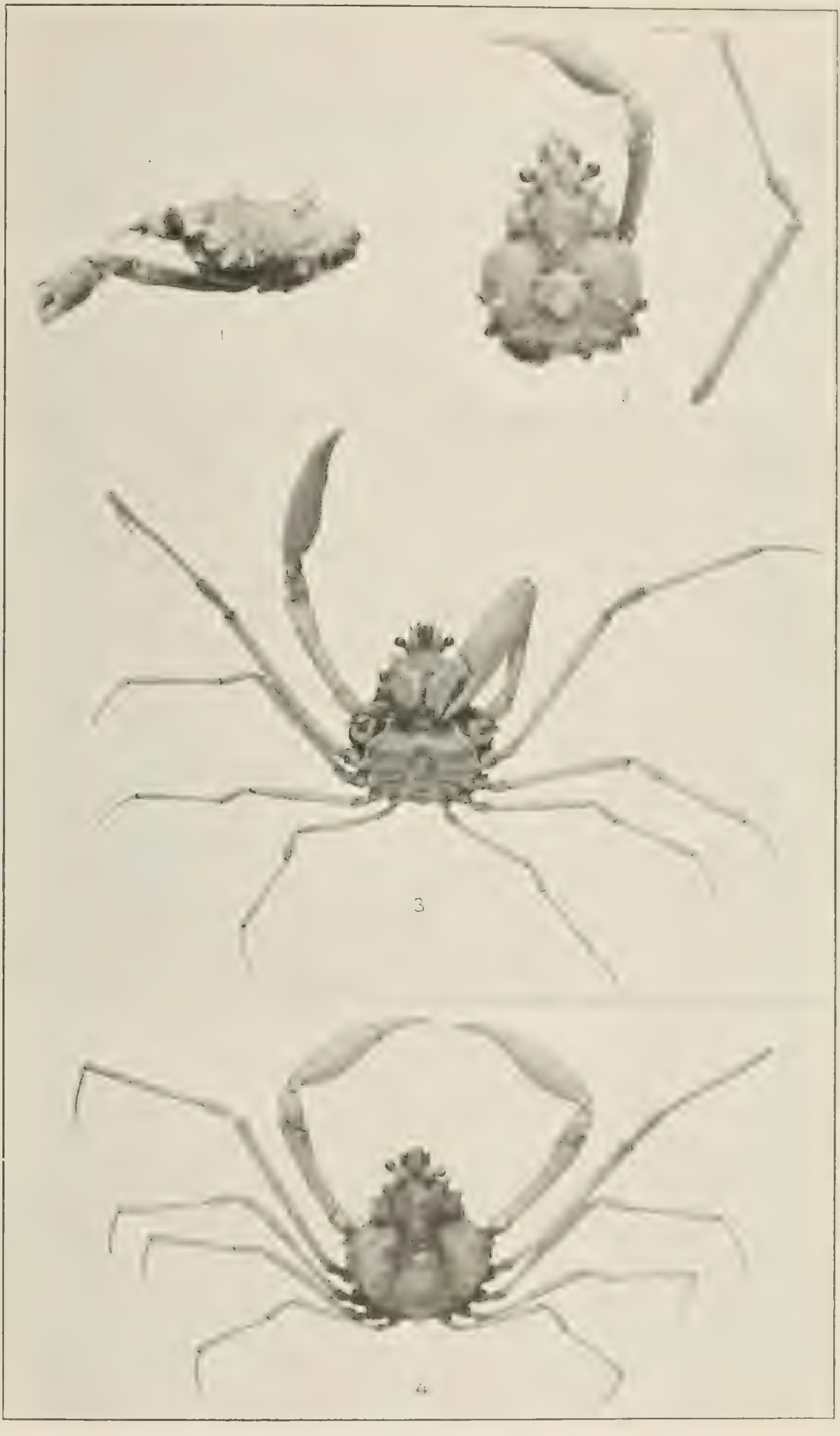

1, 2. EUPROGNATHA RASTELLIFERA. (PAGE 96.) 3, 4. E. RASTELLIFERA MARTHAE. (PAGE 96)

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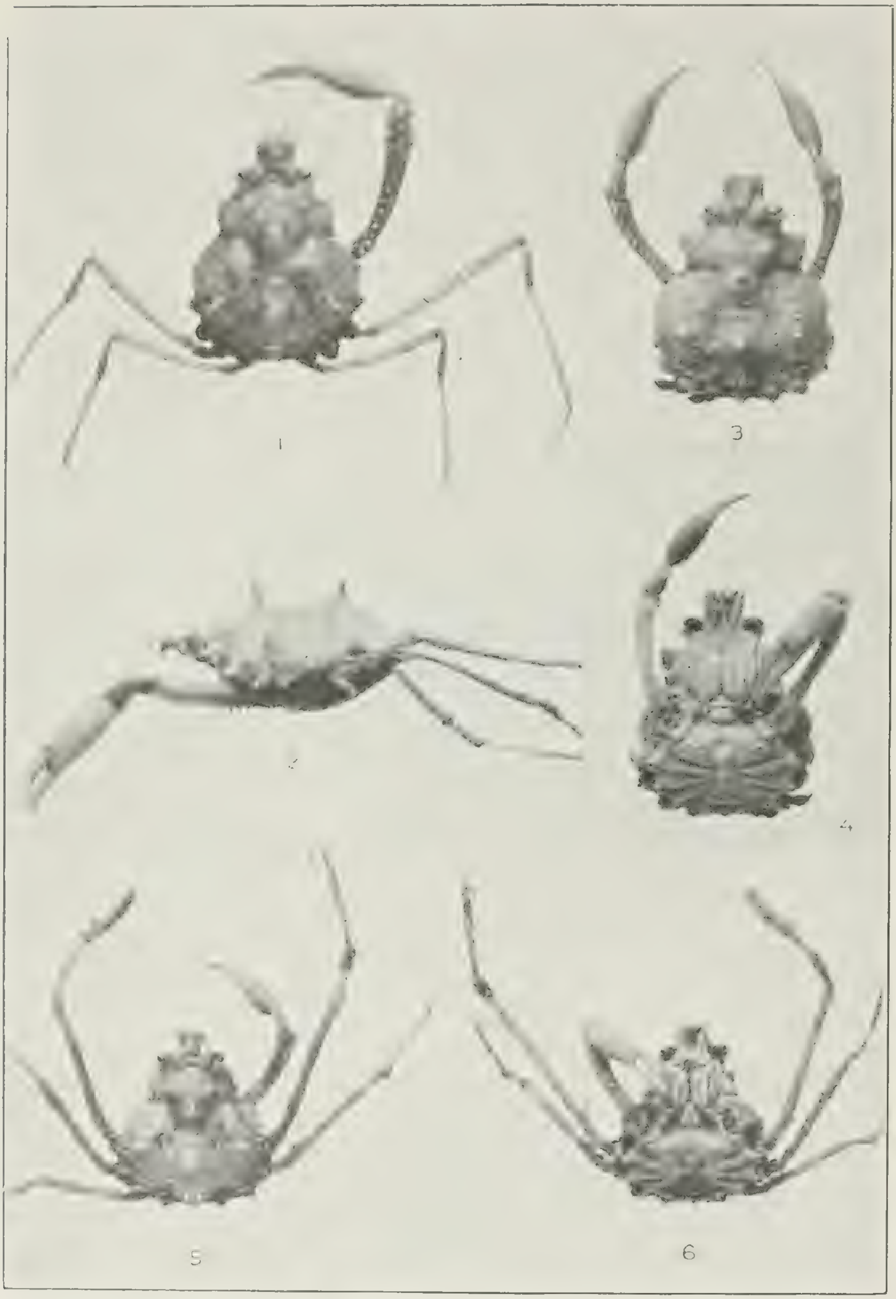

1, 2. EUPROGNATHA RASTELLIFERA ACUTA. (PAGE 96.) 3, 4. E. GRACILIPES. (PAGE 101.) 5, 6. E. BIFIDA. (PAGE 103)

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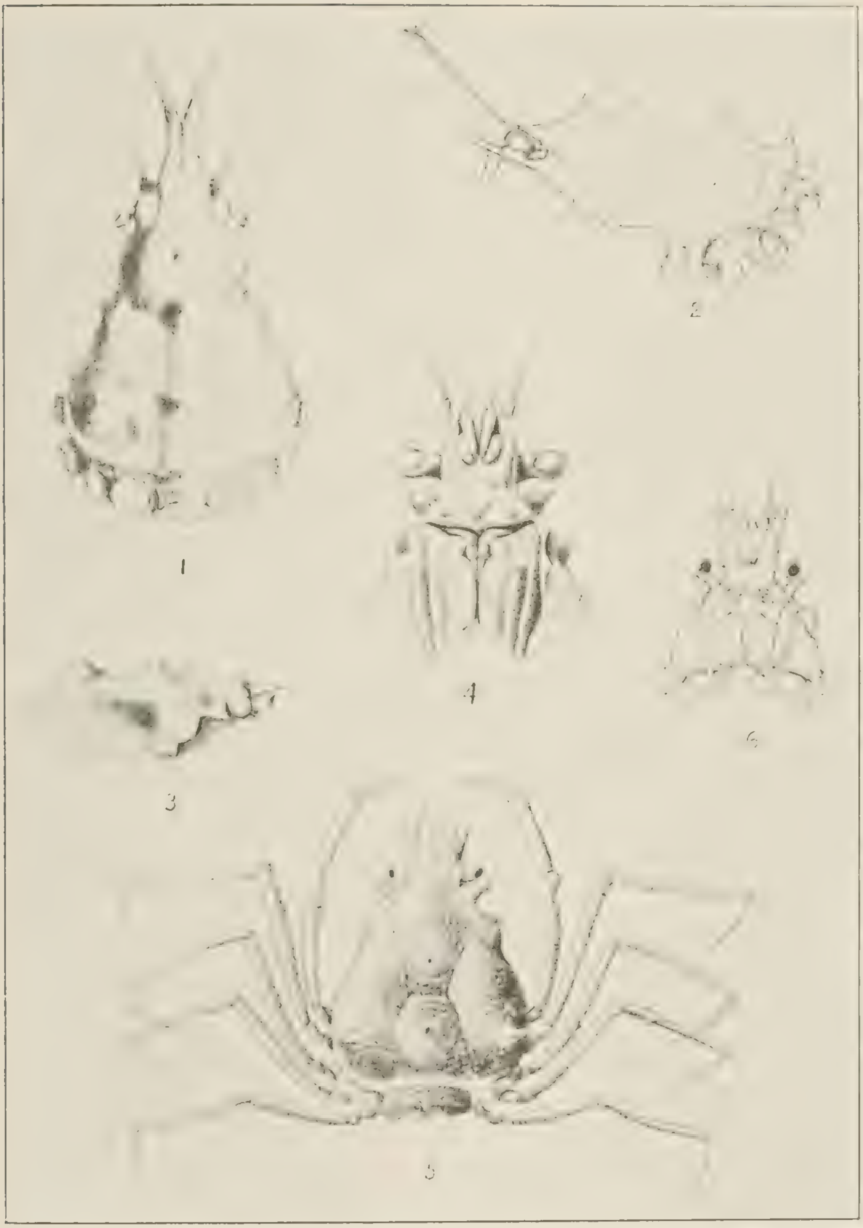

1, 2. EURYPODIUS LONGIROSTRIS. (PAGE 83.) 3, 4. EUPROGNATHA RASTELLIFERA. (PAGE 96.) 5, 6. E. GRANULATA. (PAGE 104)

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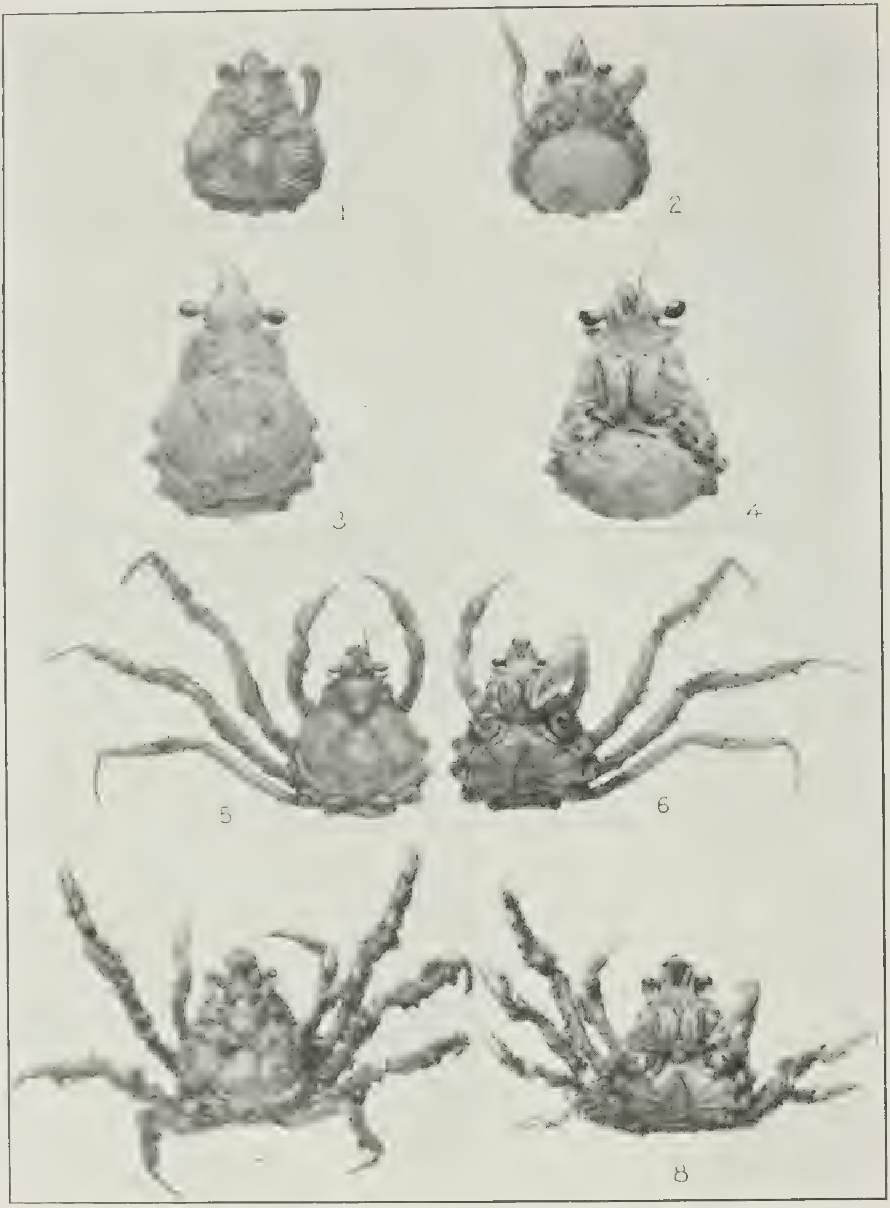
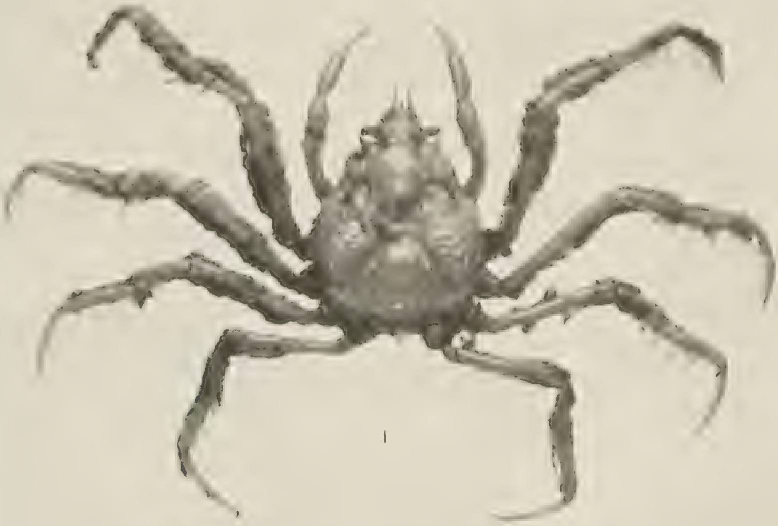


1, 2. Collodes granosus. (Page 106.) 3, 4. C. obesus. (Page 109.)
5, 6. C. trispinosus. (Page 107.) 7, 8. C. rostratus. (Page 110)

For explanation of plate see page 563



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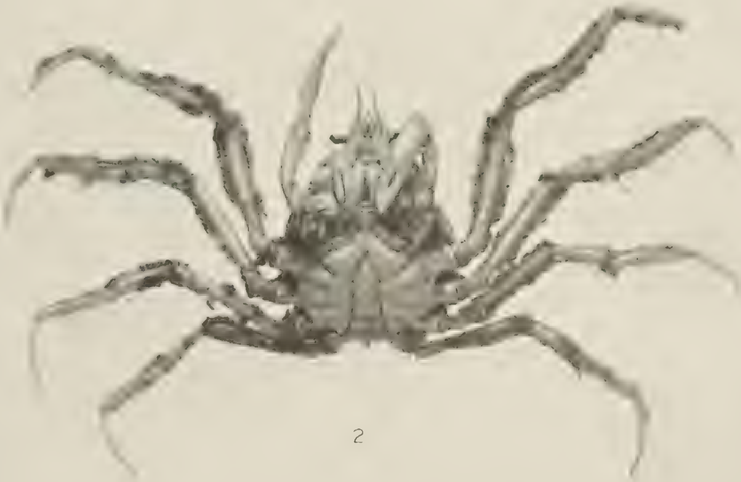

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COLLODES TENUIROSTRIS. (PAGE 113)

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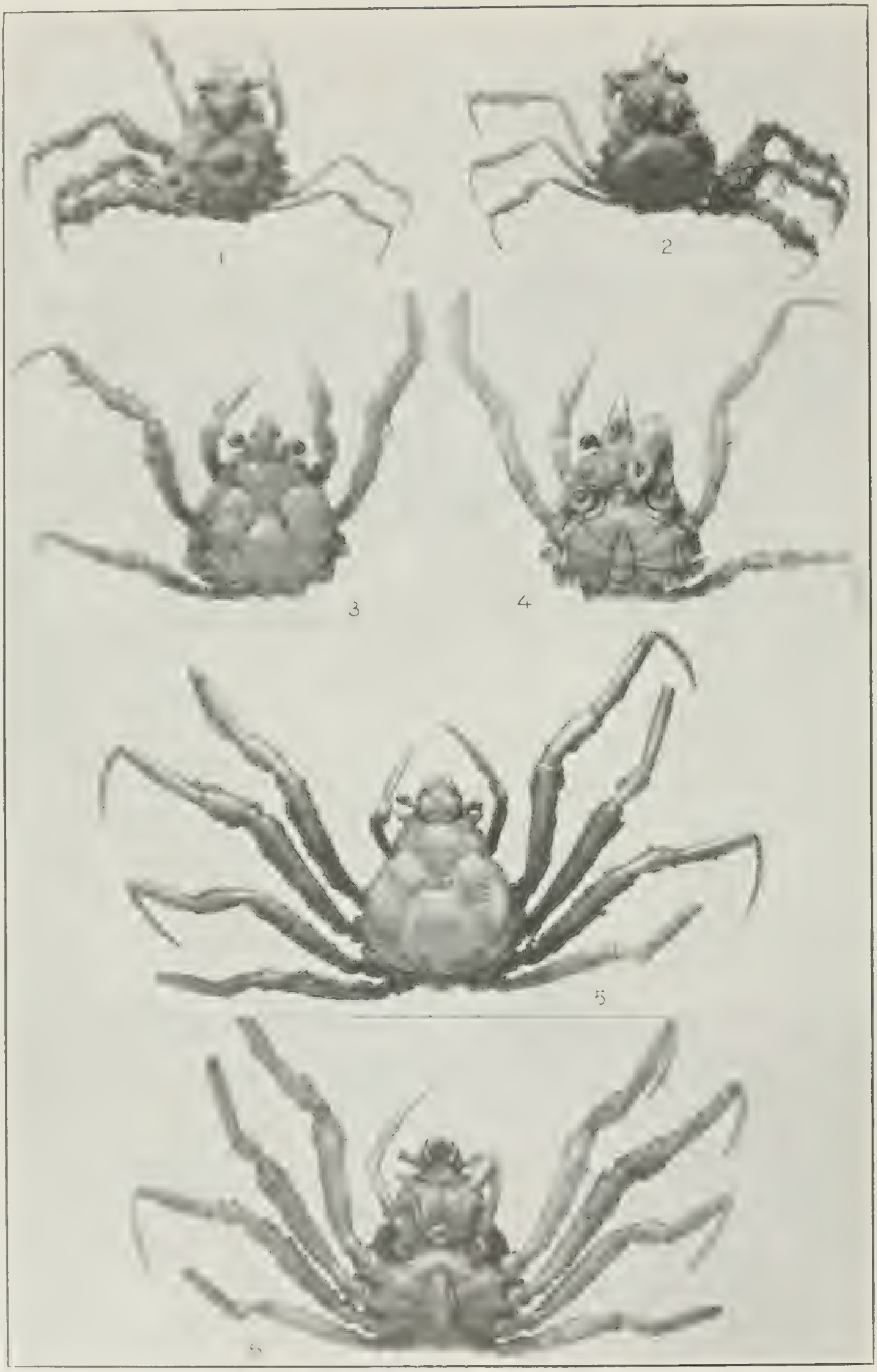
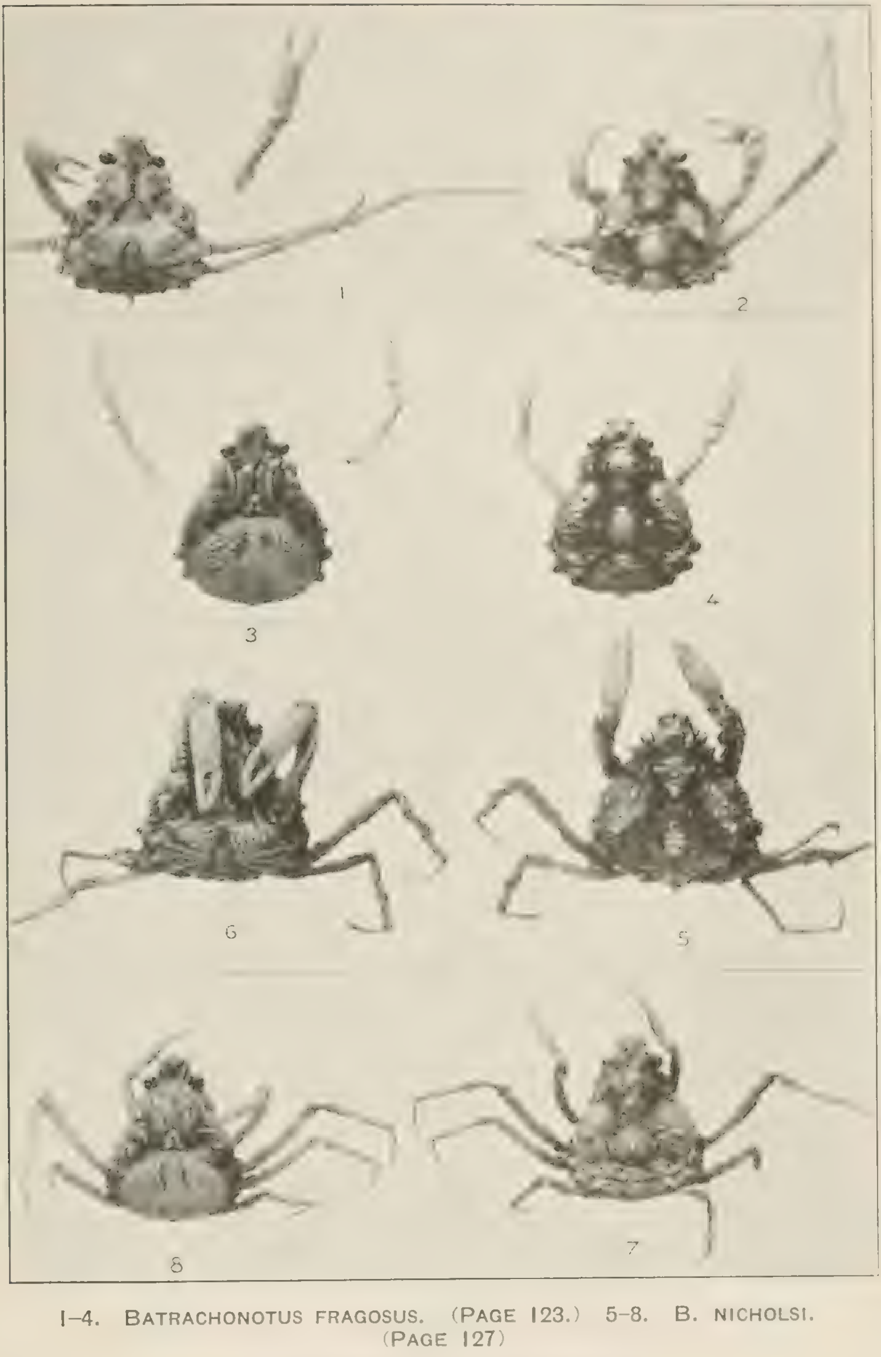


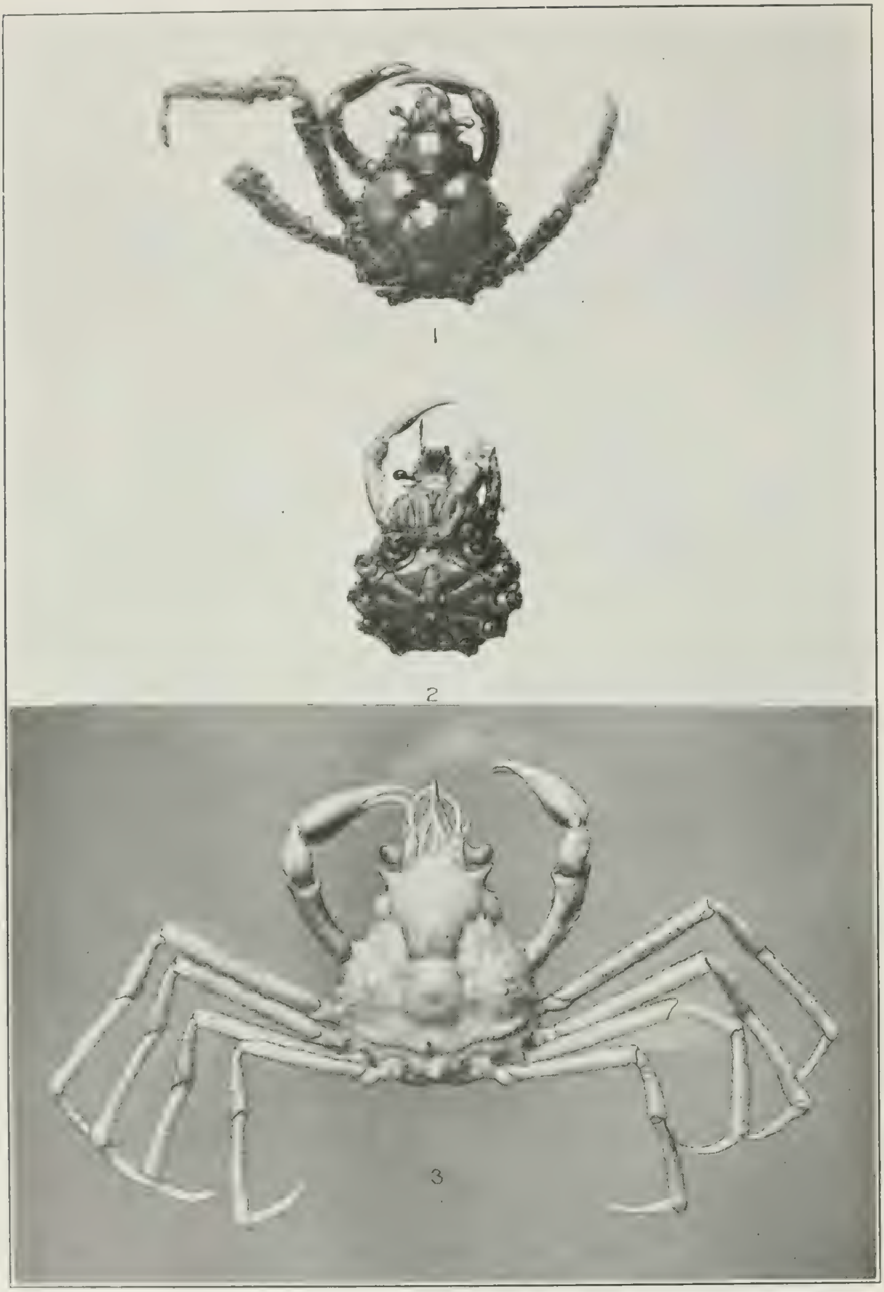
1, 2. Collodes levis. (Page 120.) 3, 4. C. inermis. (Page 119.)
5, 6. C. leptocheles. (Page 117)

For explanation of plate see page 569



1–4. Batrachonotus fragosus. (Page 123.) 5–8. B. nicholsi. (Page 127)

For explanation of plate see page 569



1, 2. COLLODES TUMIDUS. (PAGE 121.) 3. PYROMAIA TUBERCULATA. (PAGE 133)

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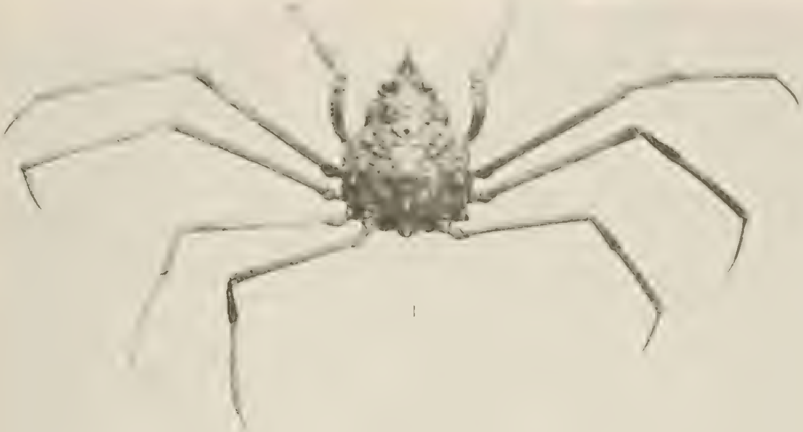
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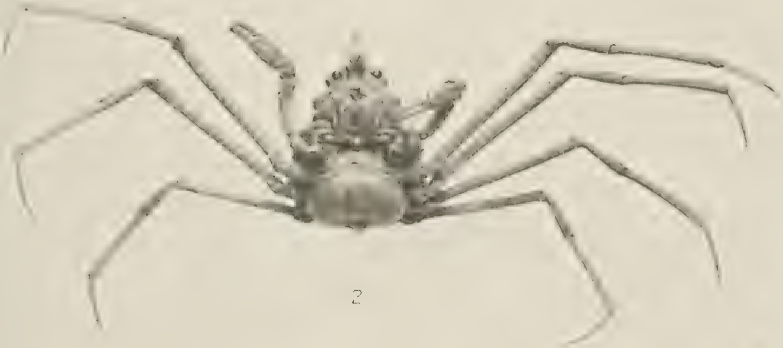
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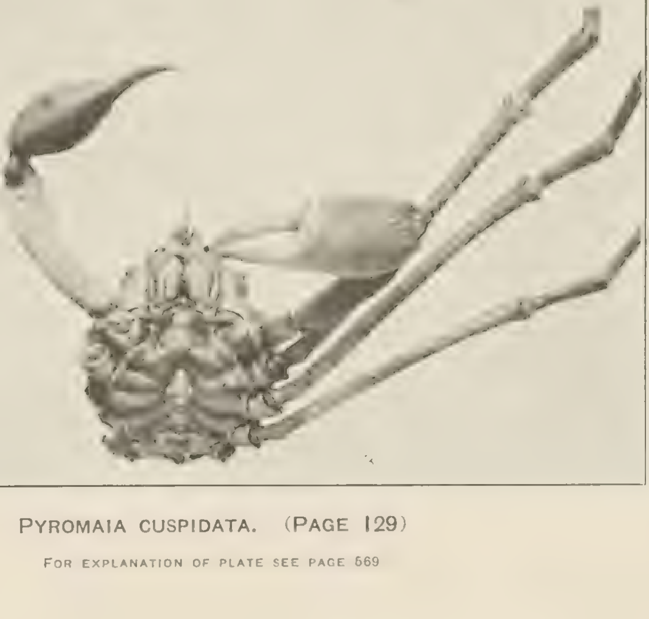
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PYROMAIA CUSPIDATA. (PAGE 129)

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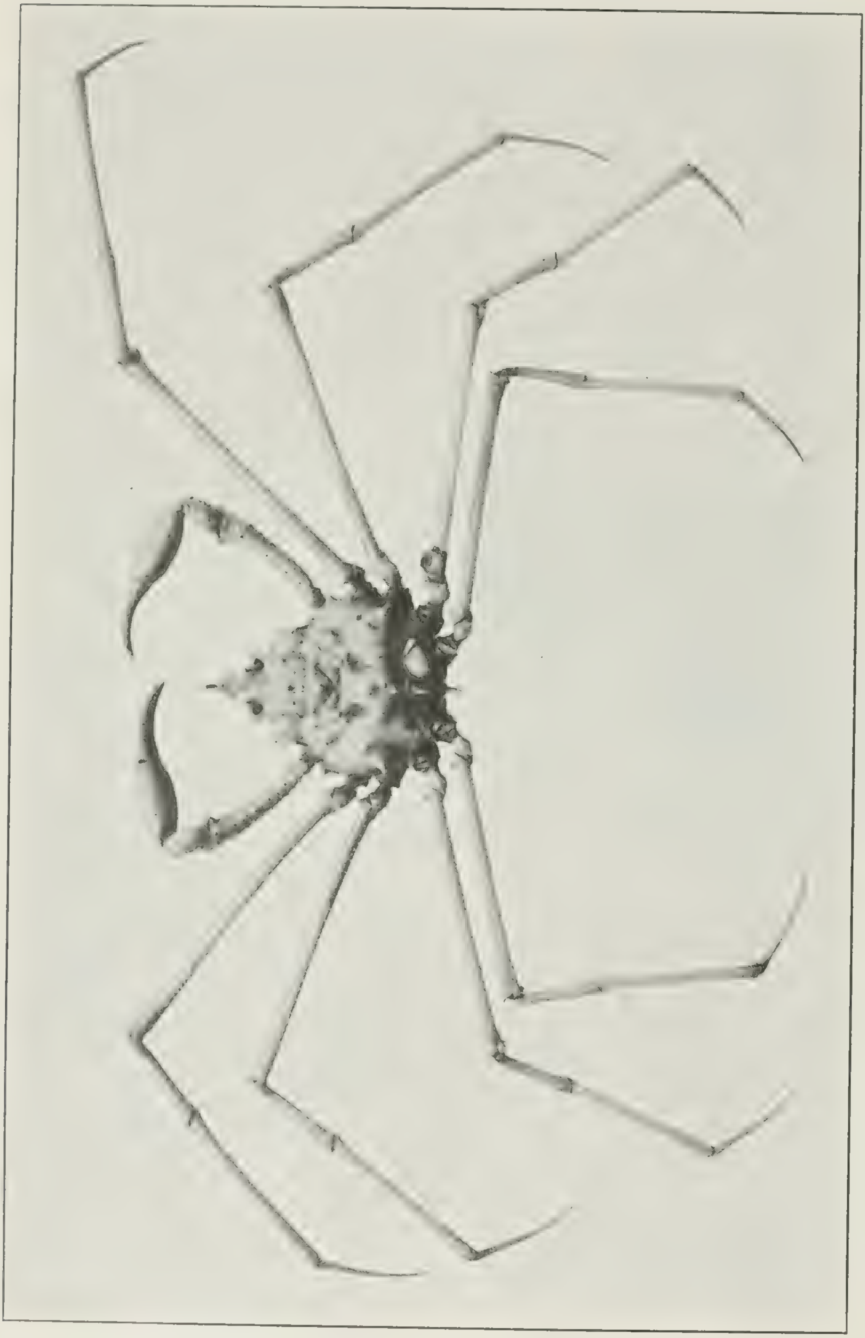
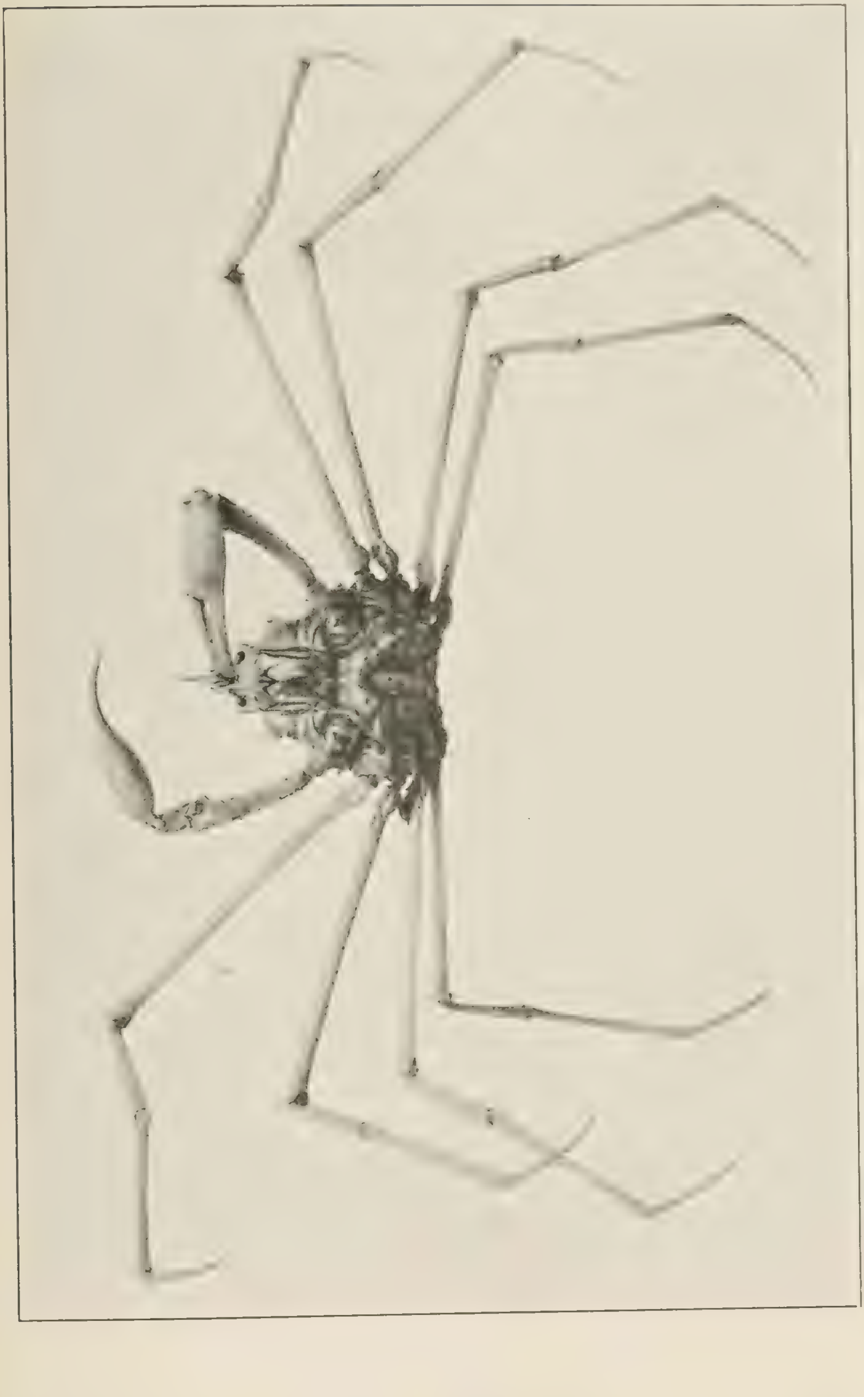


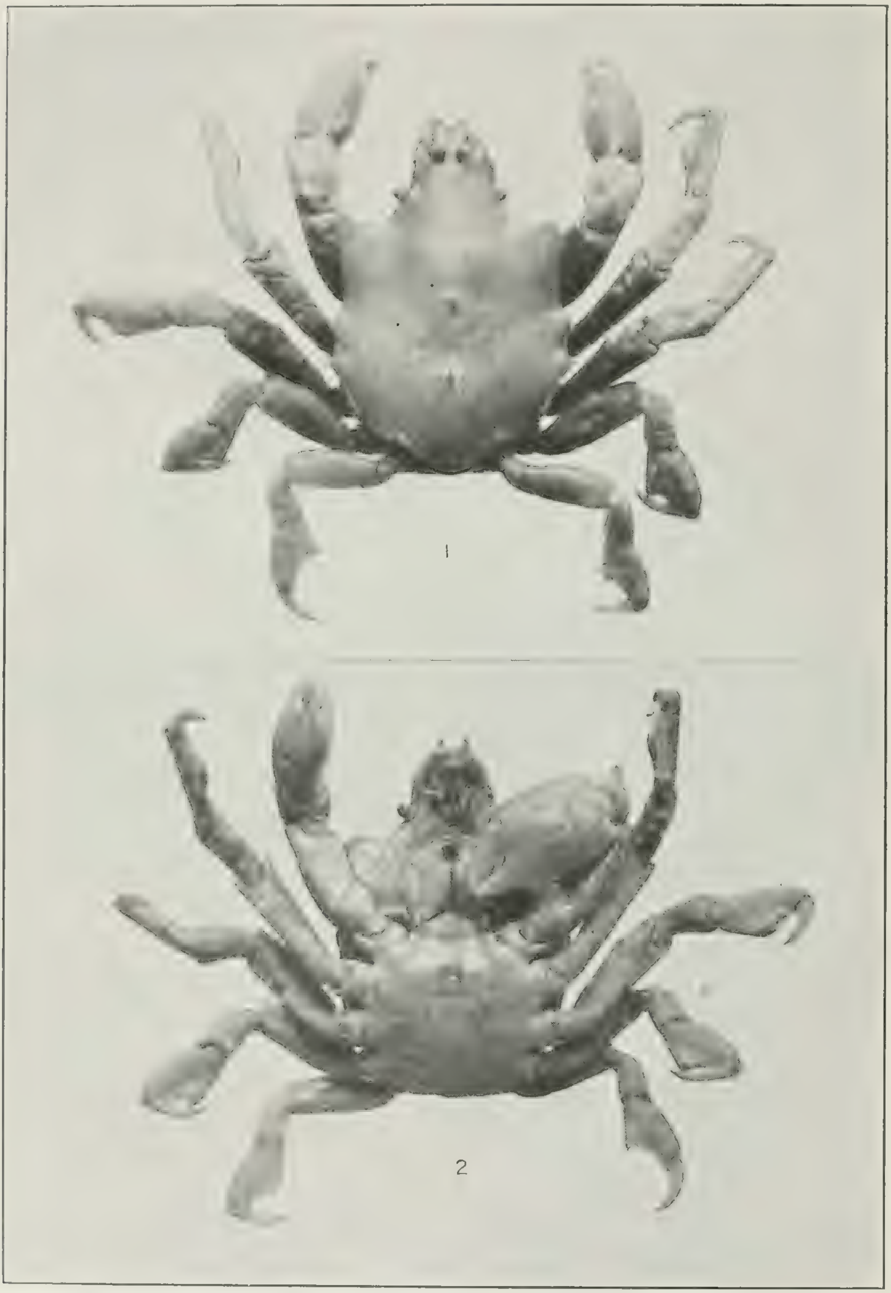
PYROMAIA ARACHNA. (PAGE 131)

FOR EXPLANATION OF PLATE SEE PAGE 569



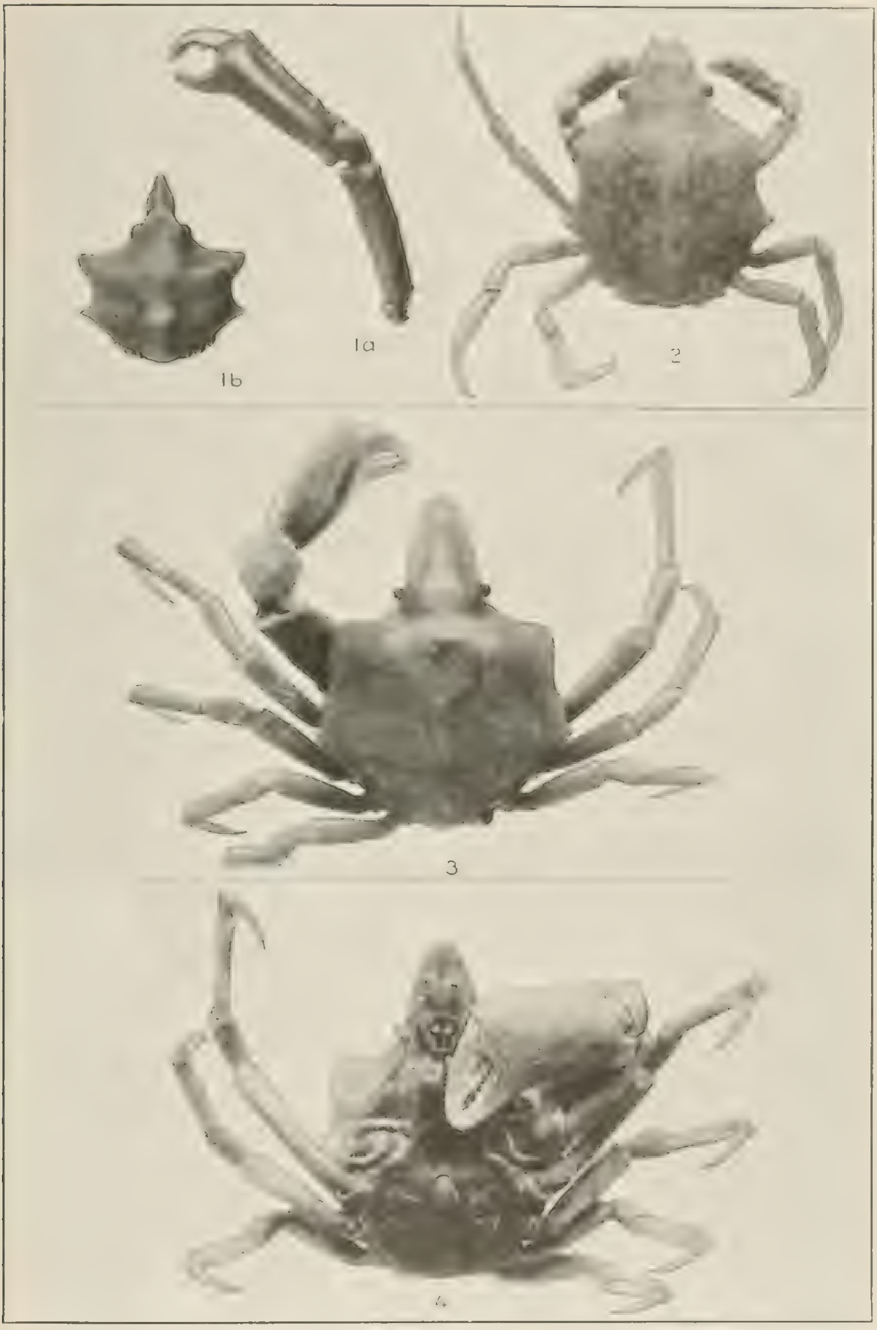
PYROMAIA ARACHNA. (PAGE 131)

FOR EXPLANATION OF PLATE SEE PAGE 569



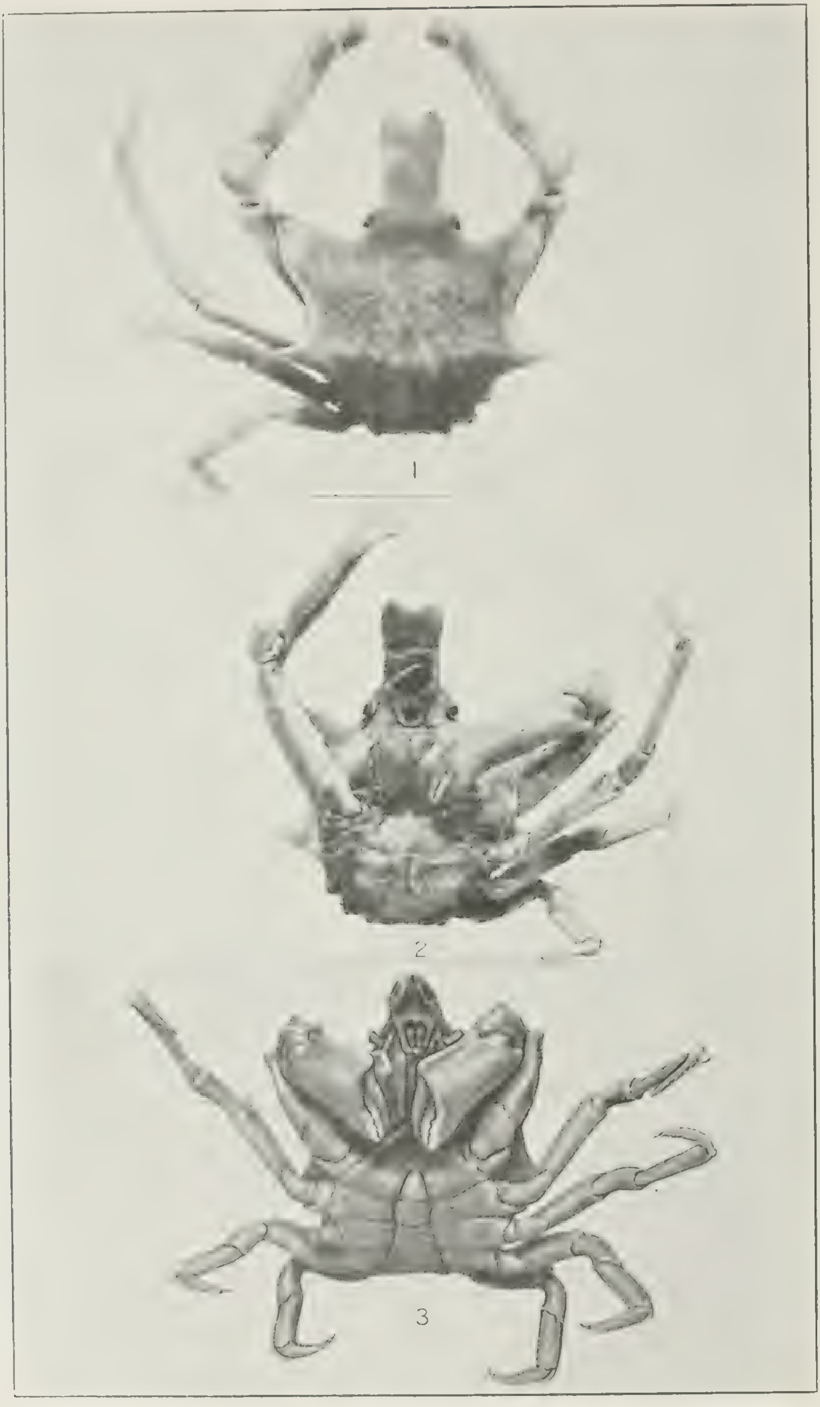
Acanthonyx petiverii. (Page 142)

For explanation of plate see page 569



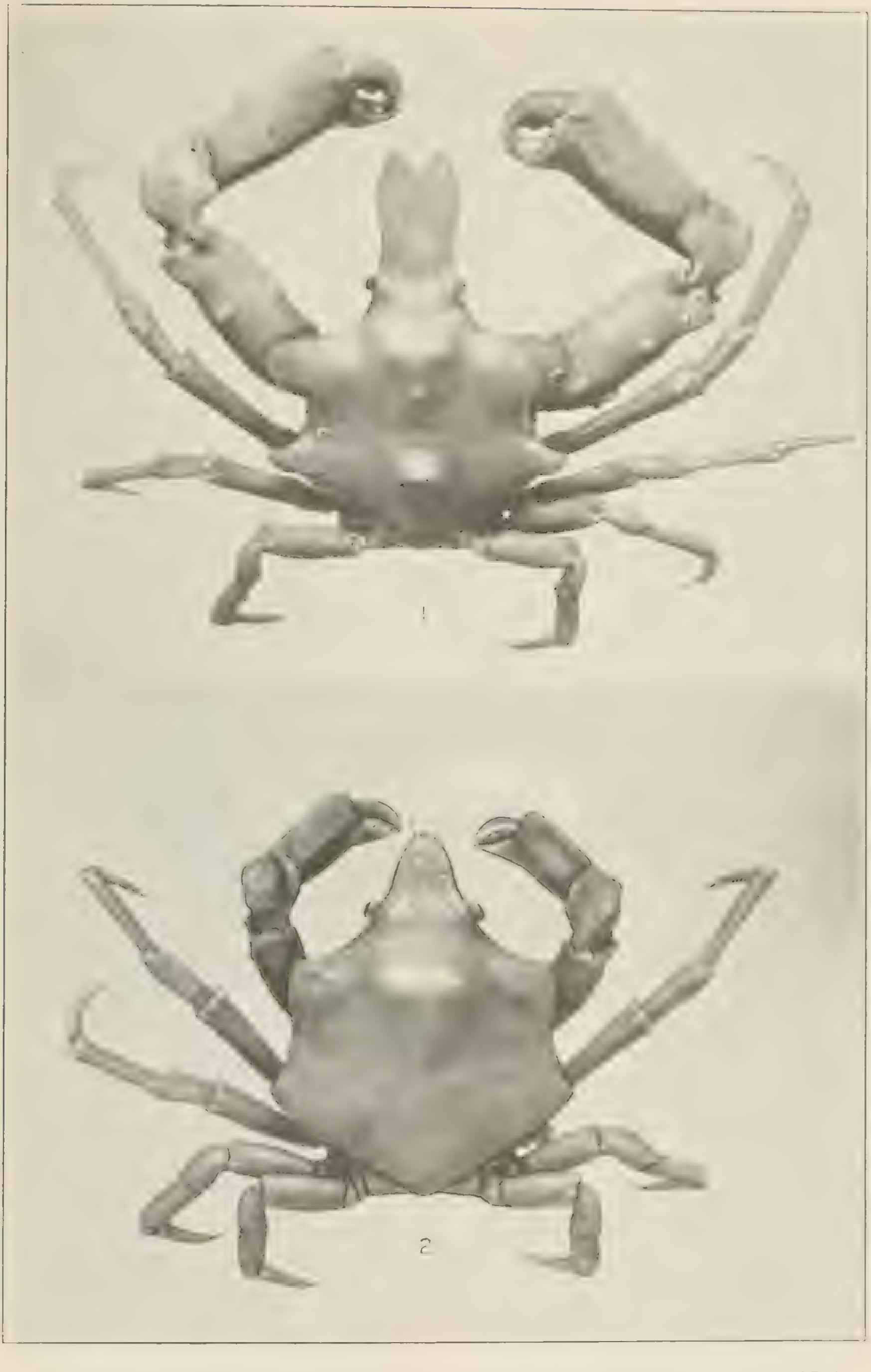
1. Epialtus kingsleyi. (Page 152.) 2. E. dilatatus. (Page 153.)
3. 4. E. bituberculatus. (Page 148)

For explanation of plate see page 569



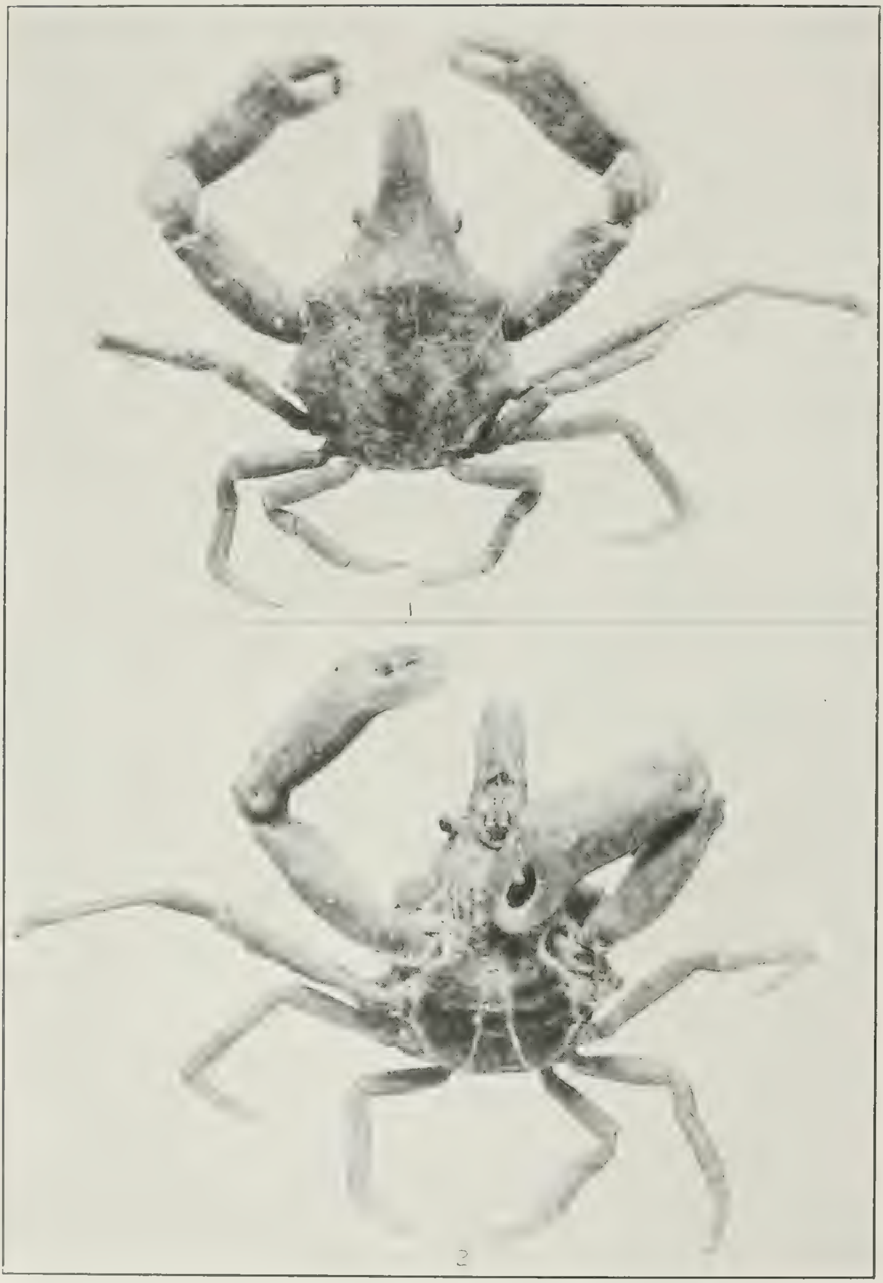
1, 2. Epialtus hiltoni. (Page 156.) 3. E. sulcirostris. (Page 150)

For explanation of plate see page 570



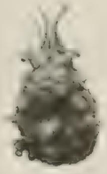
1. Epialtus minimus. (Page 155.) 2. E. sulcirostris. (Page 150)

For explanation of plate see page 570



EPIALTUS DILATATUS FORMA ELONGATA. (PAGE 154)

FOR EXPLANATION OF PLATE SEE PAGE 570



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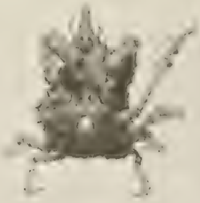

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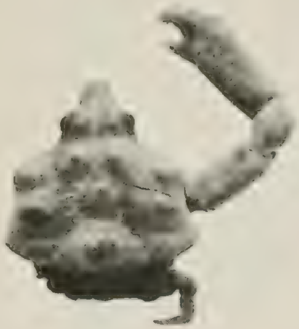

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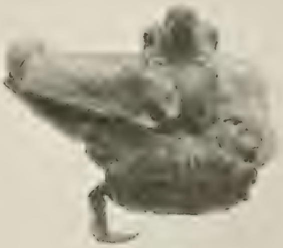

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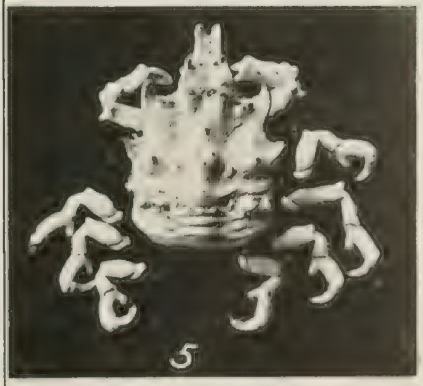

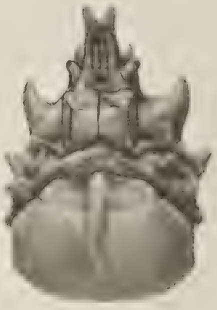

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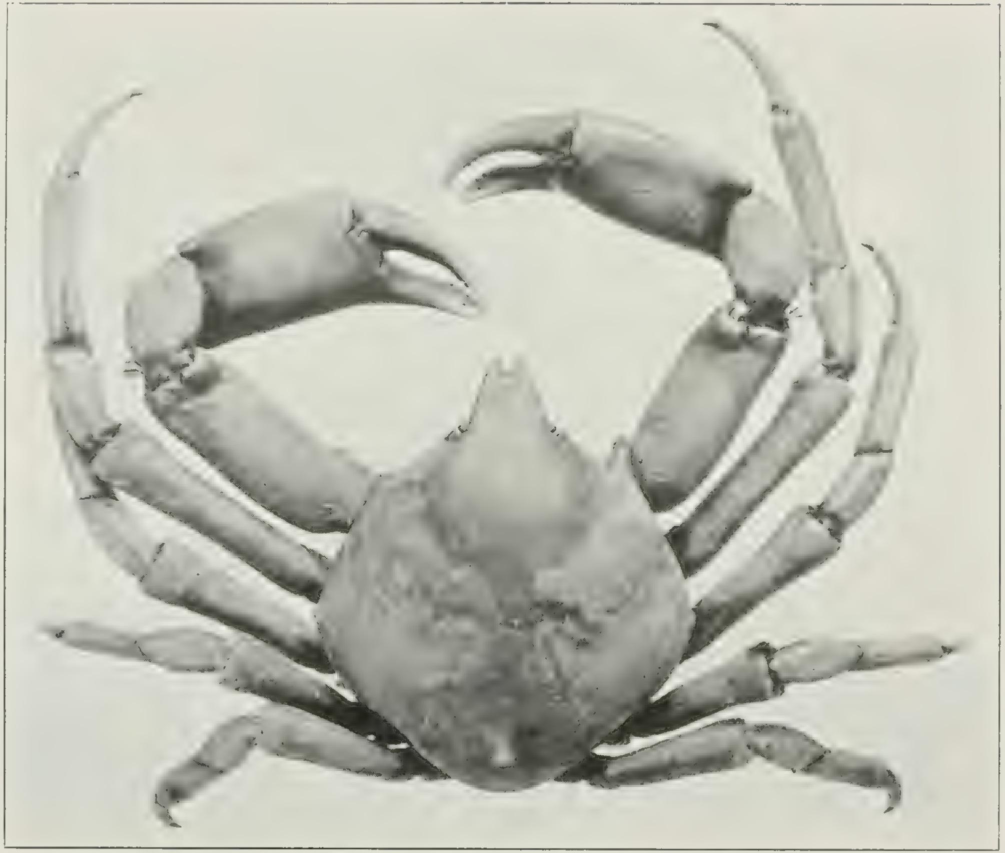
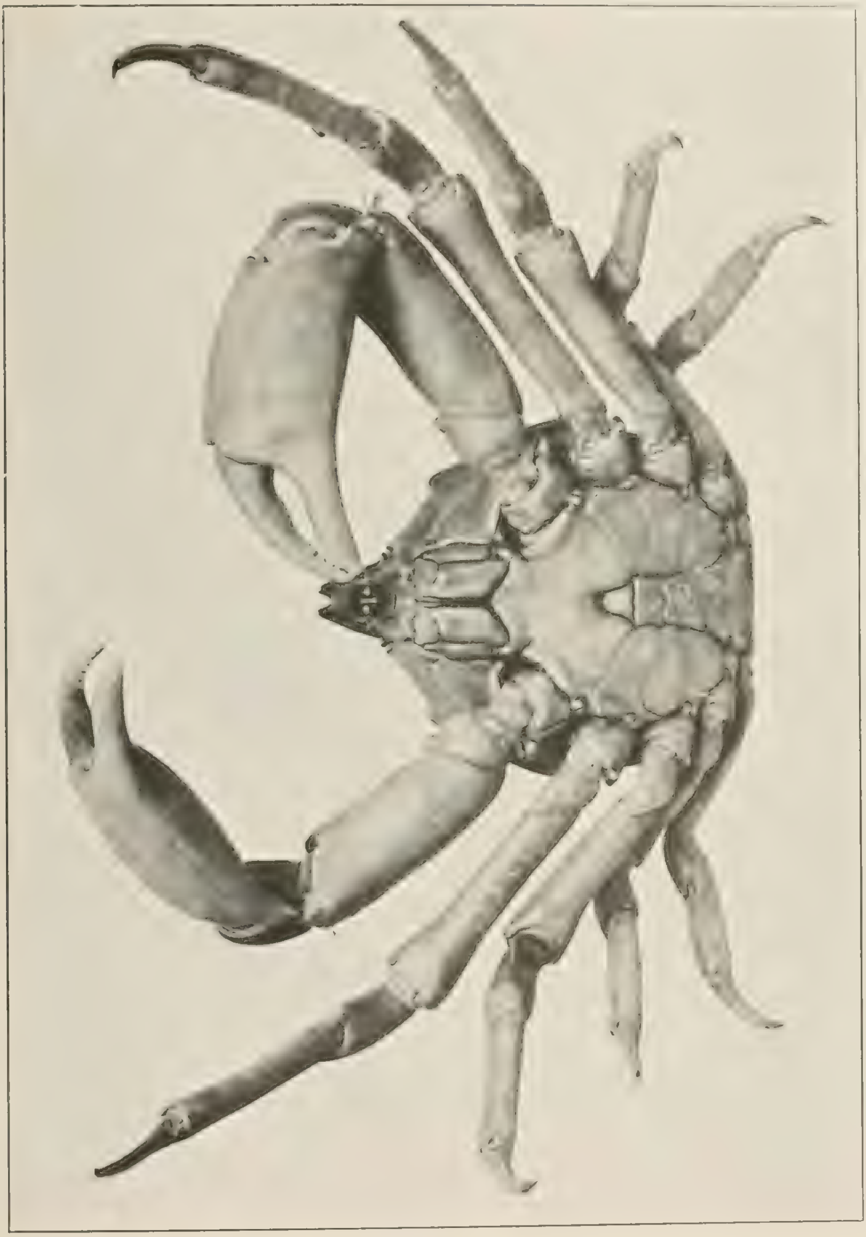
1, 2. MENAETHIOPS PORTORICENSIS. (PAGE 190.) 3, 4. MOCOSOA CREBRIPUNCTATA. (PAGE 159.) 5, 6. EUPLEURODON PERUVIANUS. (PAGE 161)

FOR EXPLANATION OF PLATE SEE PAGE 570



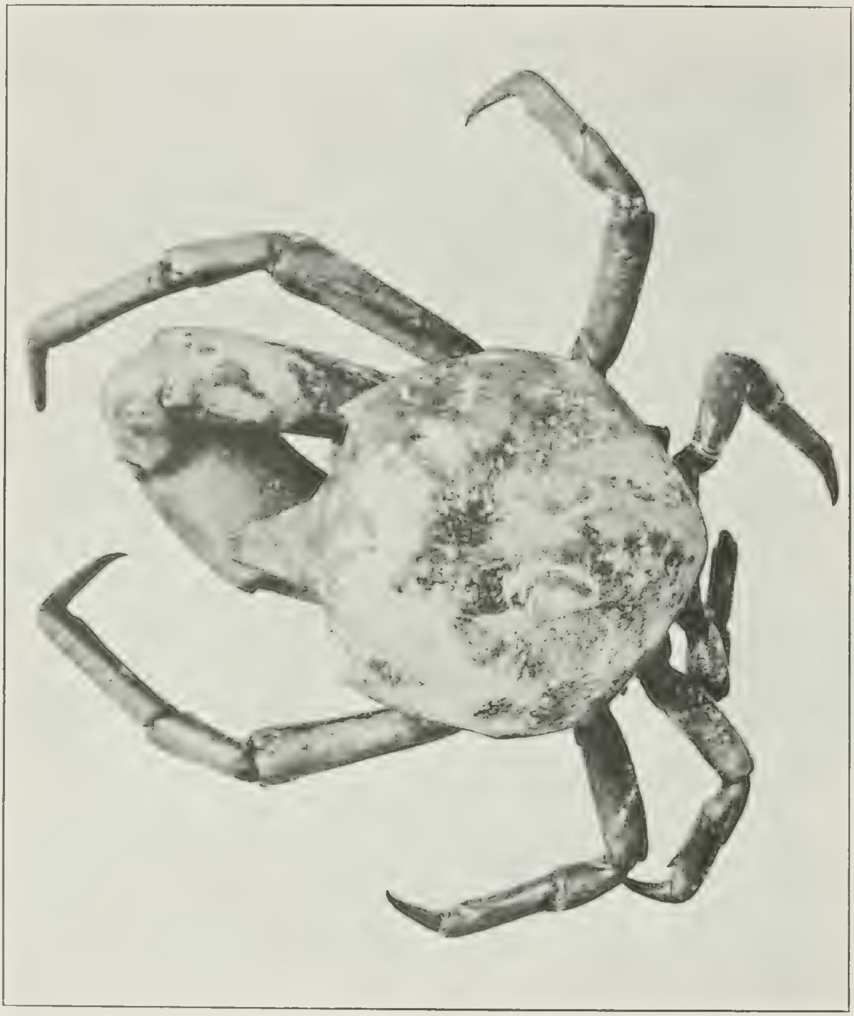
Taliepus nuttallii. (Page 162)

For explanation of plate see page 570



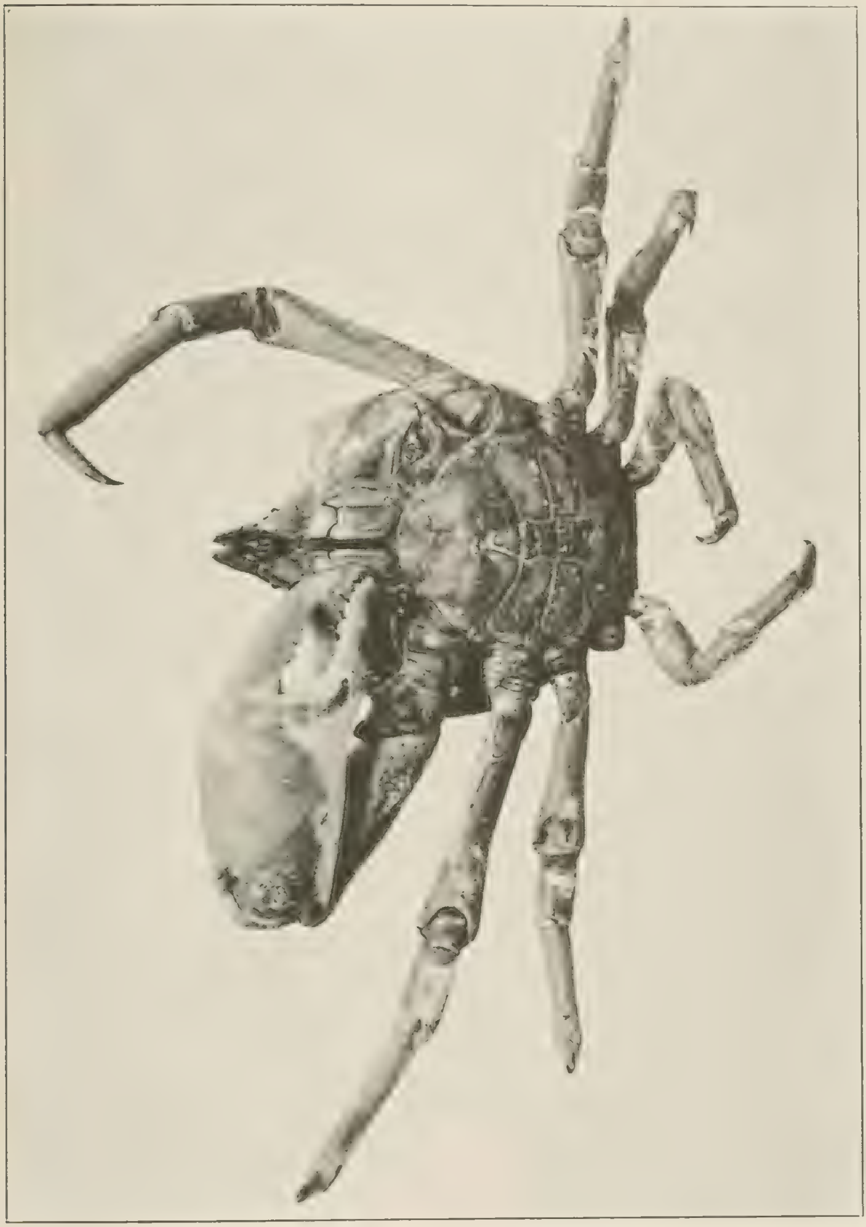
TALIEPUS NUTTALLII. (PAGE 162)

FOR EXPLANATION OF PLATE SEE PAGE 570



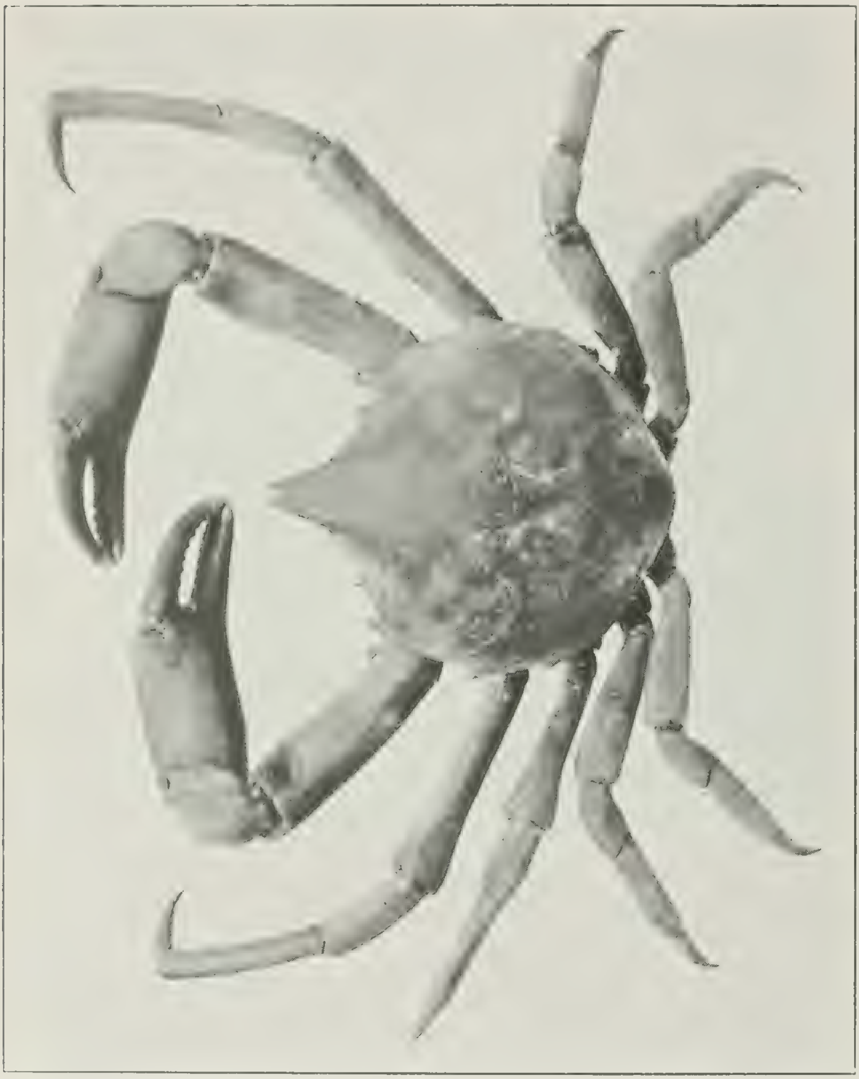
Taliepus marginatus. (Page 164)

For explanation of plate see page 570



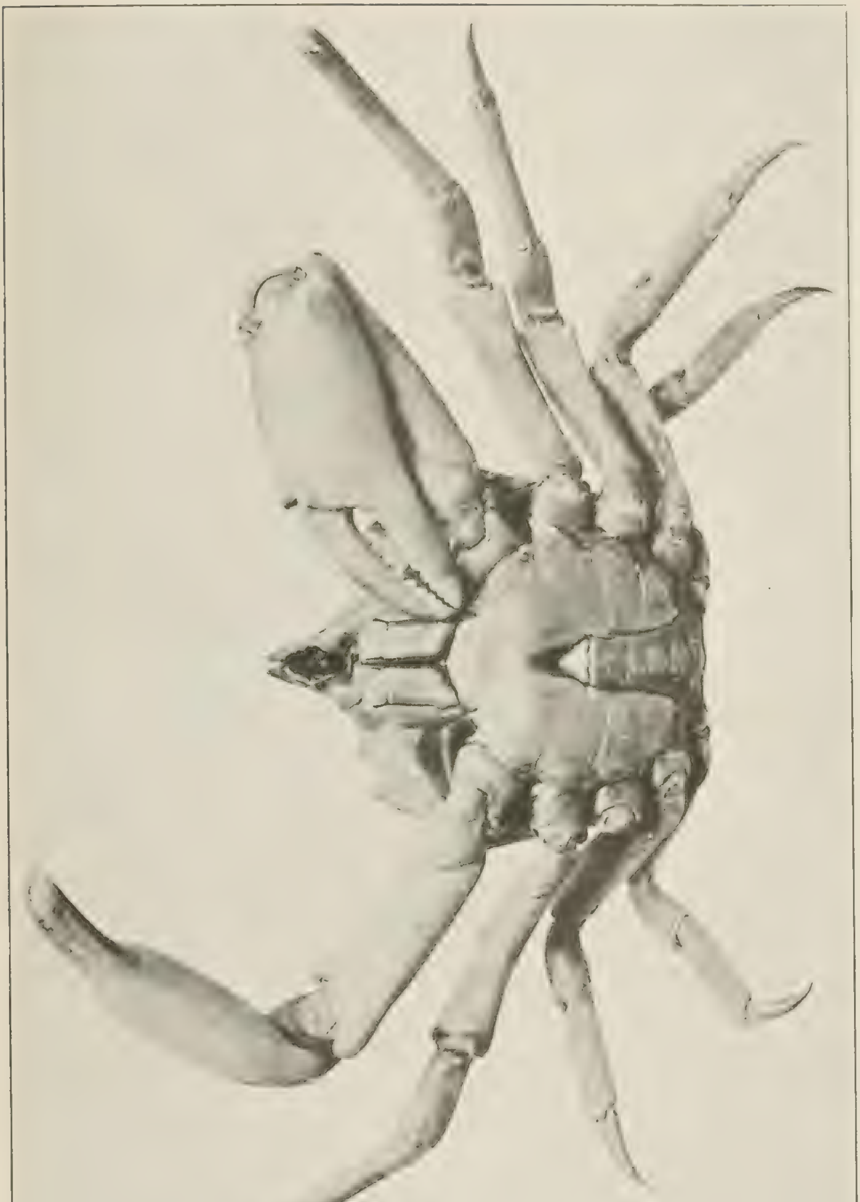
TALIEPUS MARGINATUS. (PAGE 164)

FOR EXPLANATION OF PLATE SEE PAGE 570



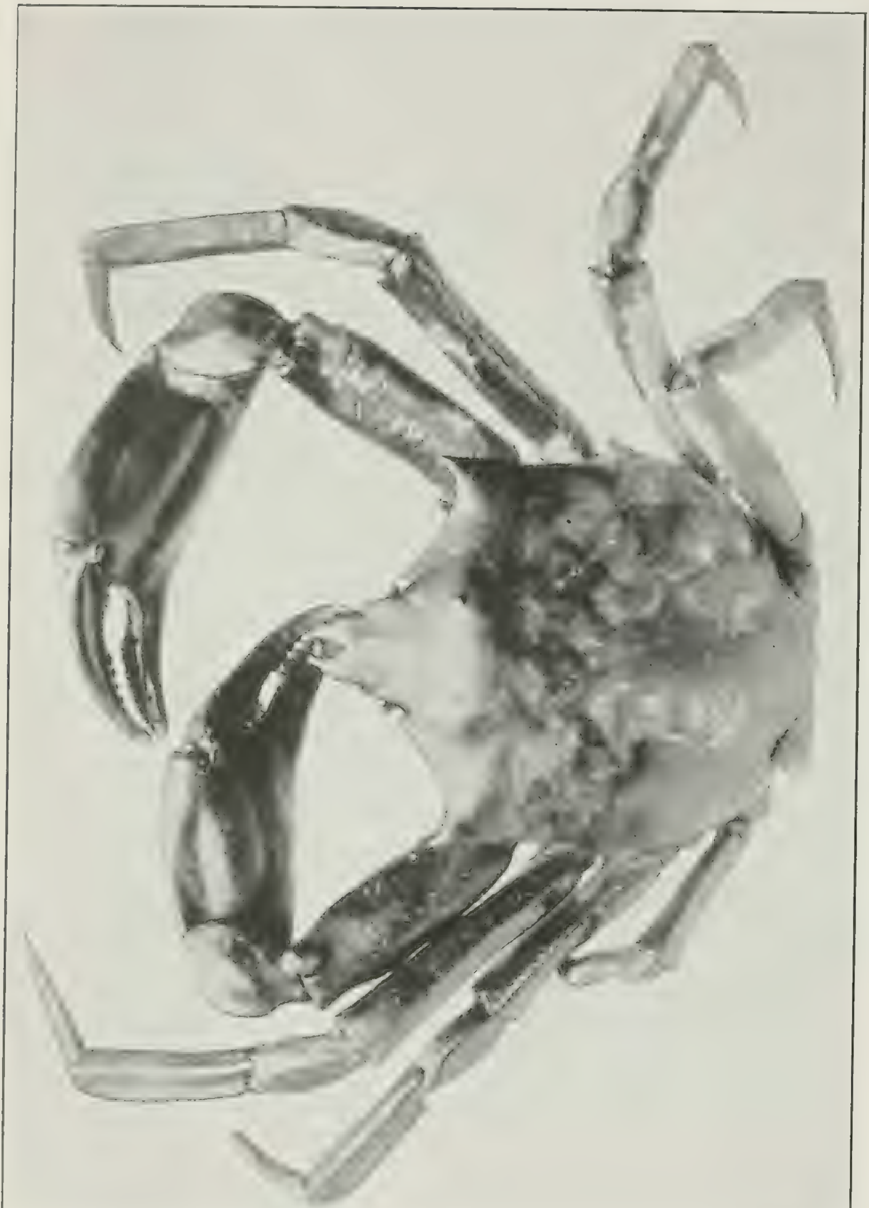
TALIEPUS DENTATUS. (PAGE 165)

FOR EXPLANATION OF PLATE SEE PAGE 570



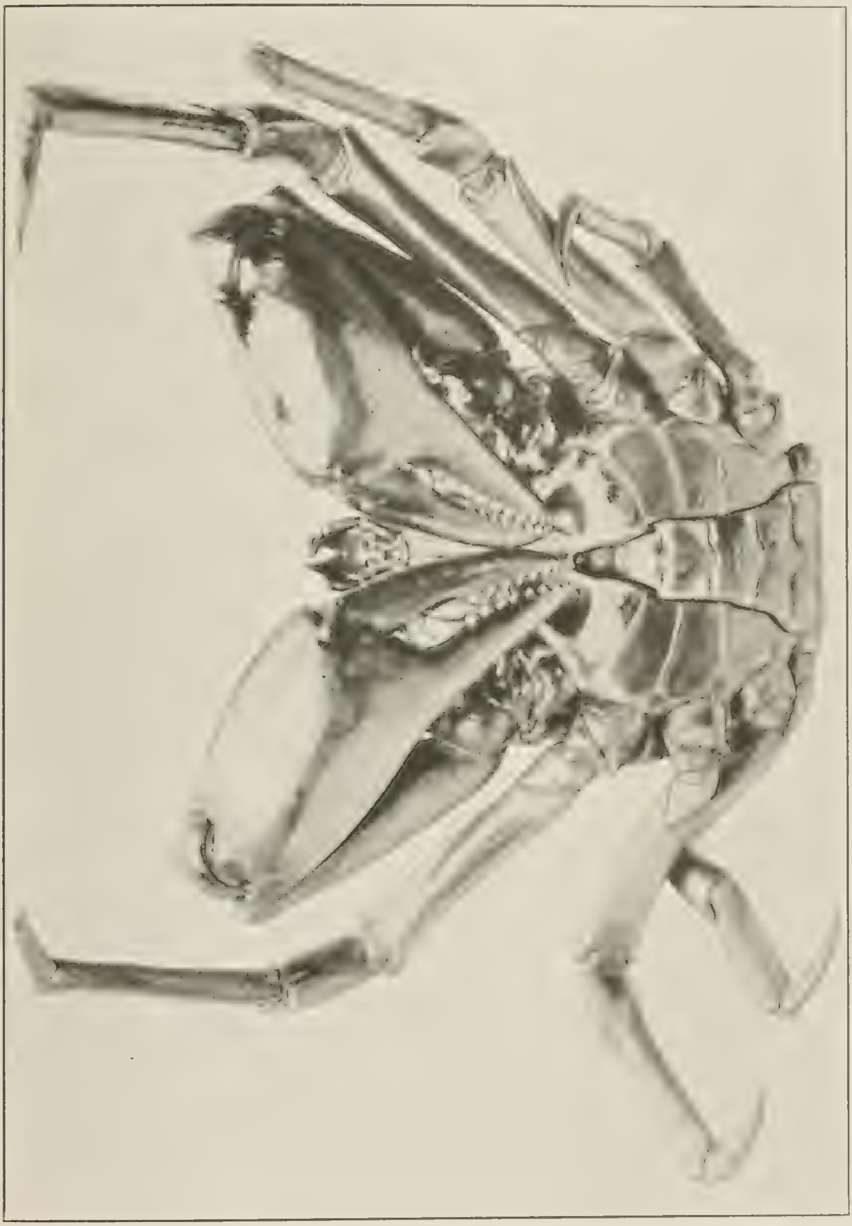
TALIEPUS DENTATUS. (PAGE 165)

FOR EXPLANATION OF PLATE SEE PAGE 570



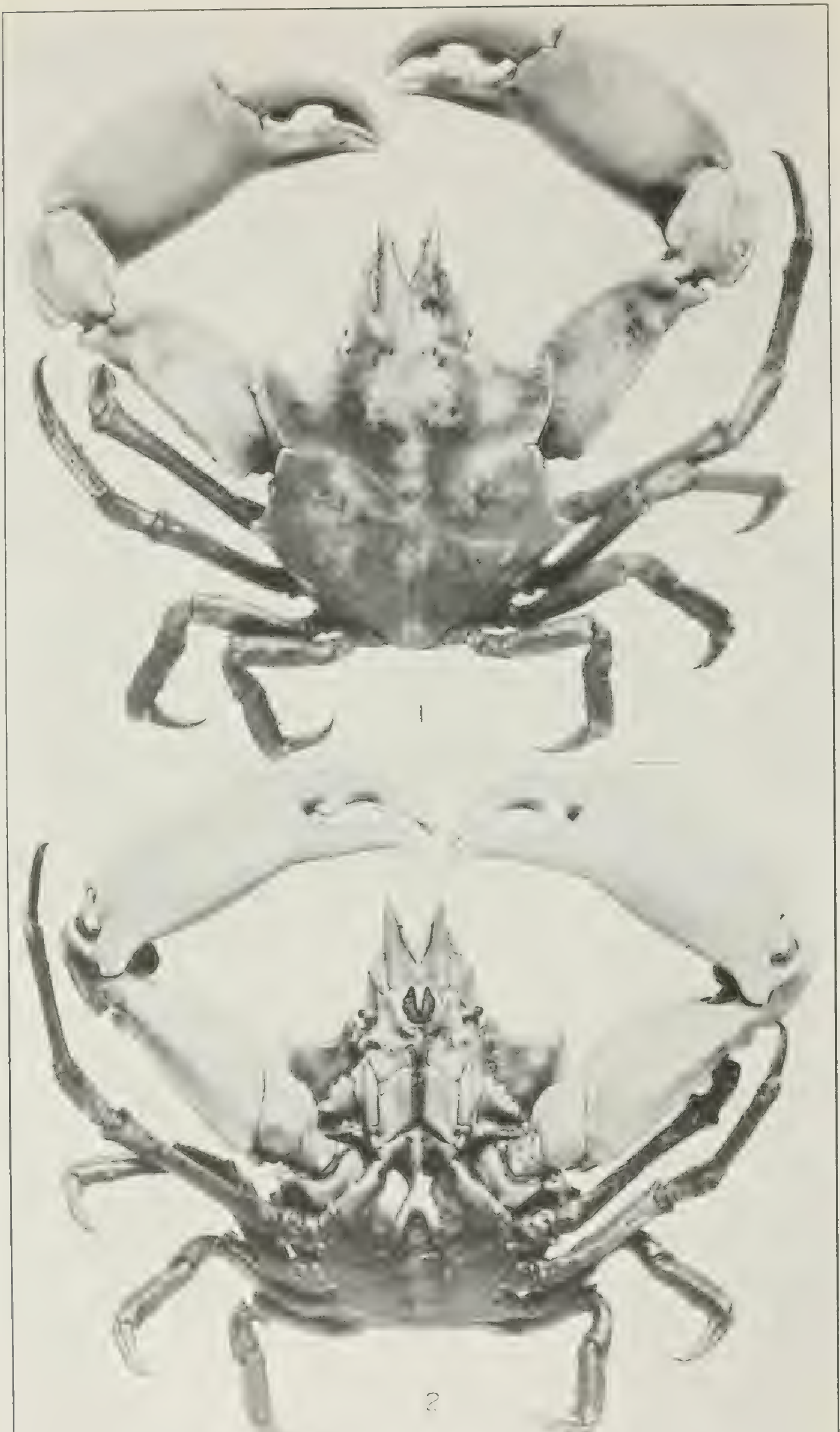
PUGETTIA PRODUCTA. (PAGE 167)

FOR EXPLANATION OF PLATE SEE PAGE 570



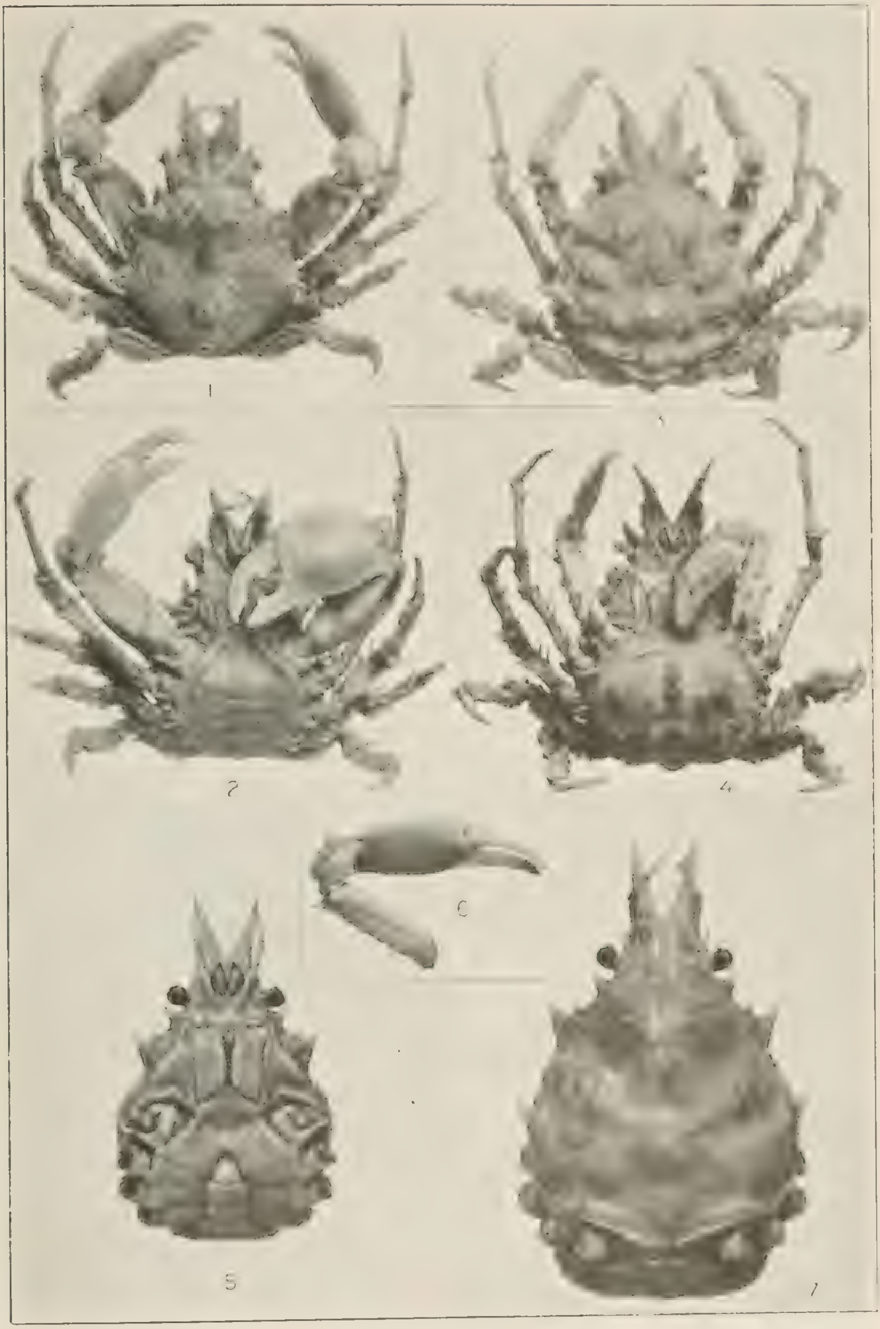
PUGETTIA PRODUCTA. (PAGE 167)

FOR EXPLANATION OF PLATE SEE PAGE 571



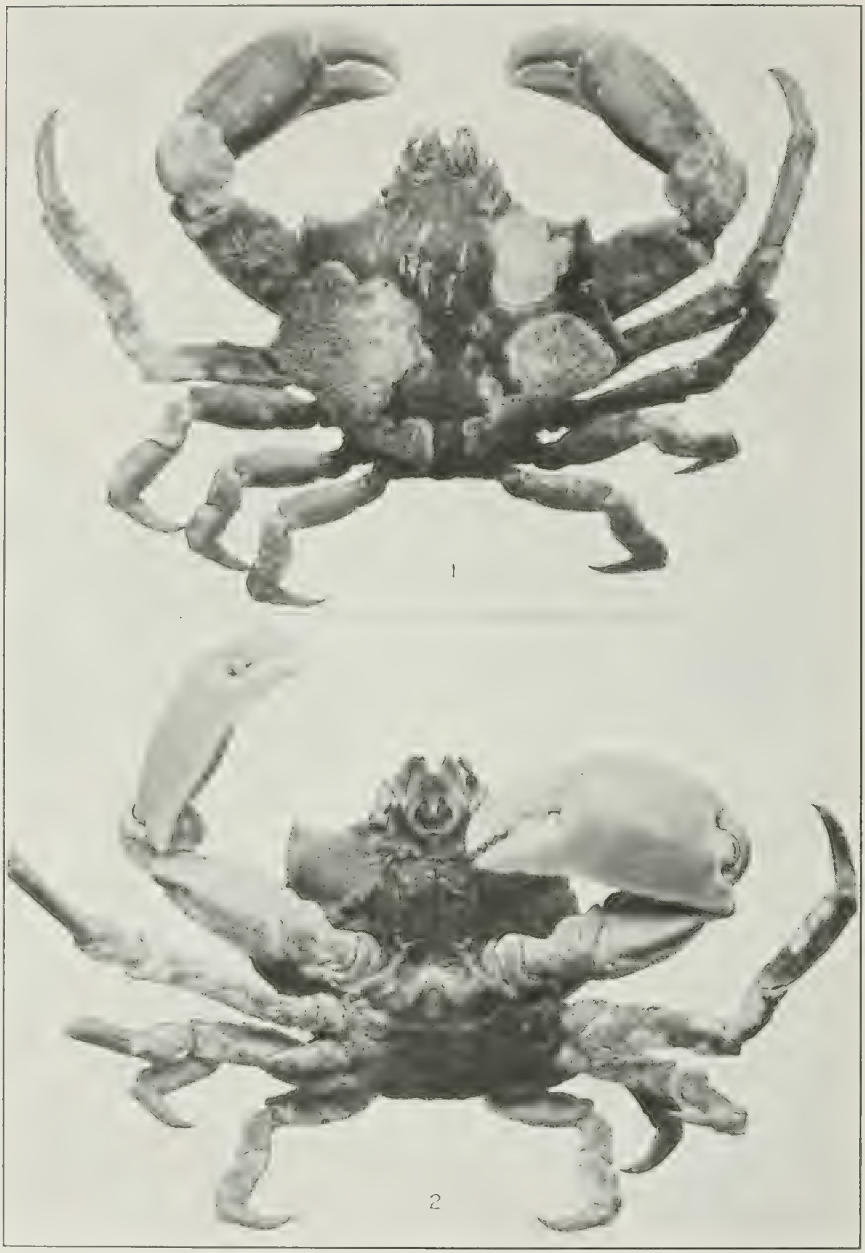
PUGETTIA GRACILIS. (PAGE 172)

FOR EXPLANATION OF PLATE SEE PAGE 571



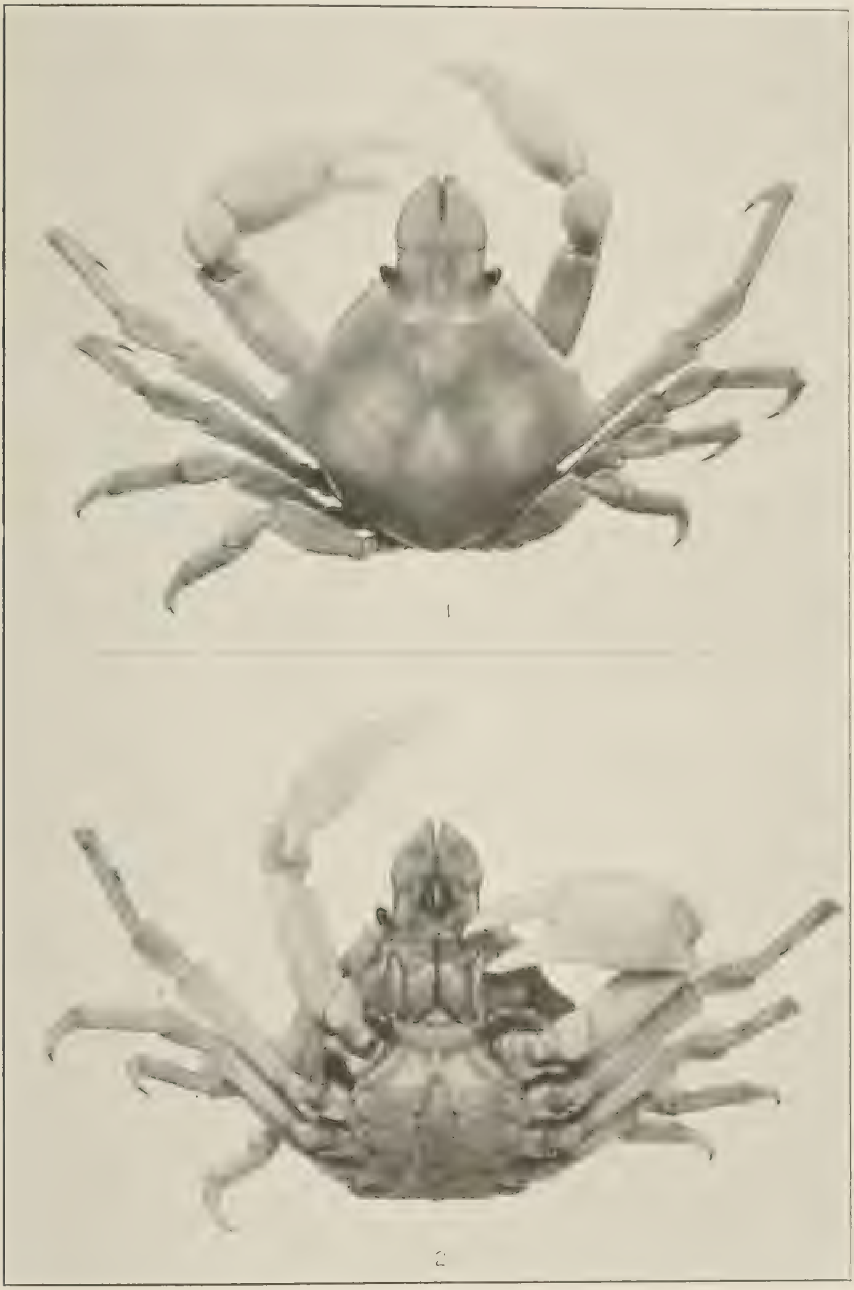
1–4. PUGETTIA DALLI. (PAGE 178.) 5–7. P. VENETIAE. (PAGE 180)

FOR EXPLANATION OF PLATE SEE PAGE 571



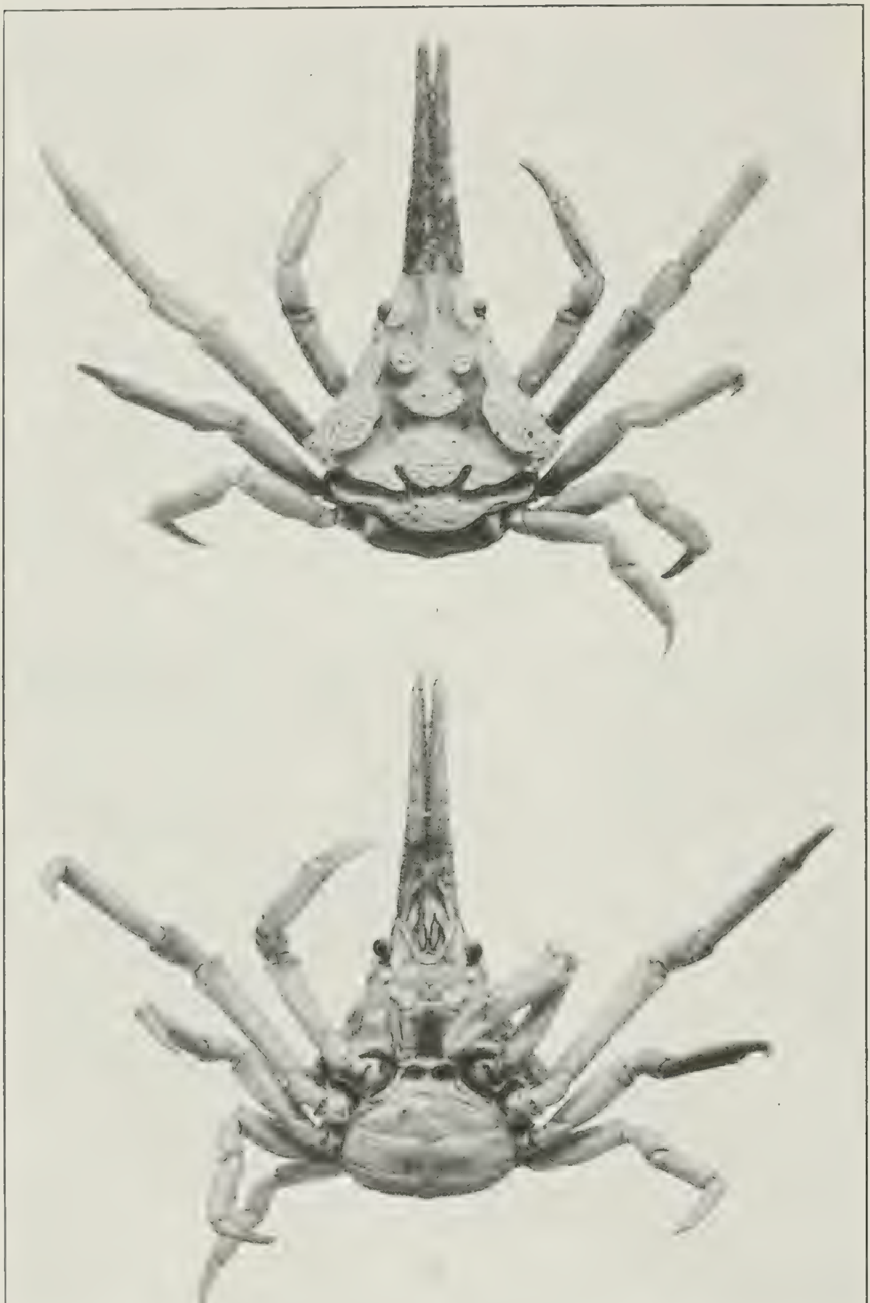
MIMULUS FOLIATUS. (PAGE 182)

FOR EXPLANATION OF PLATE SEE PAGE 571



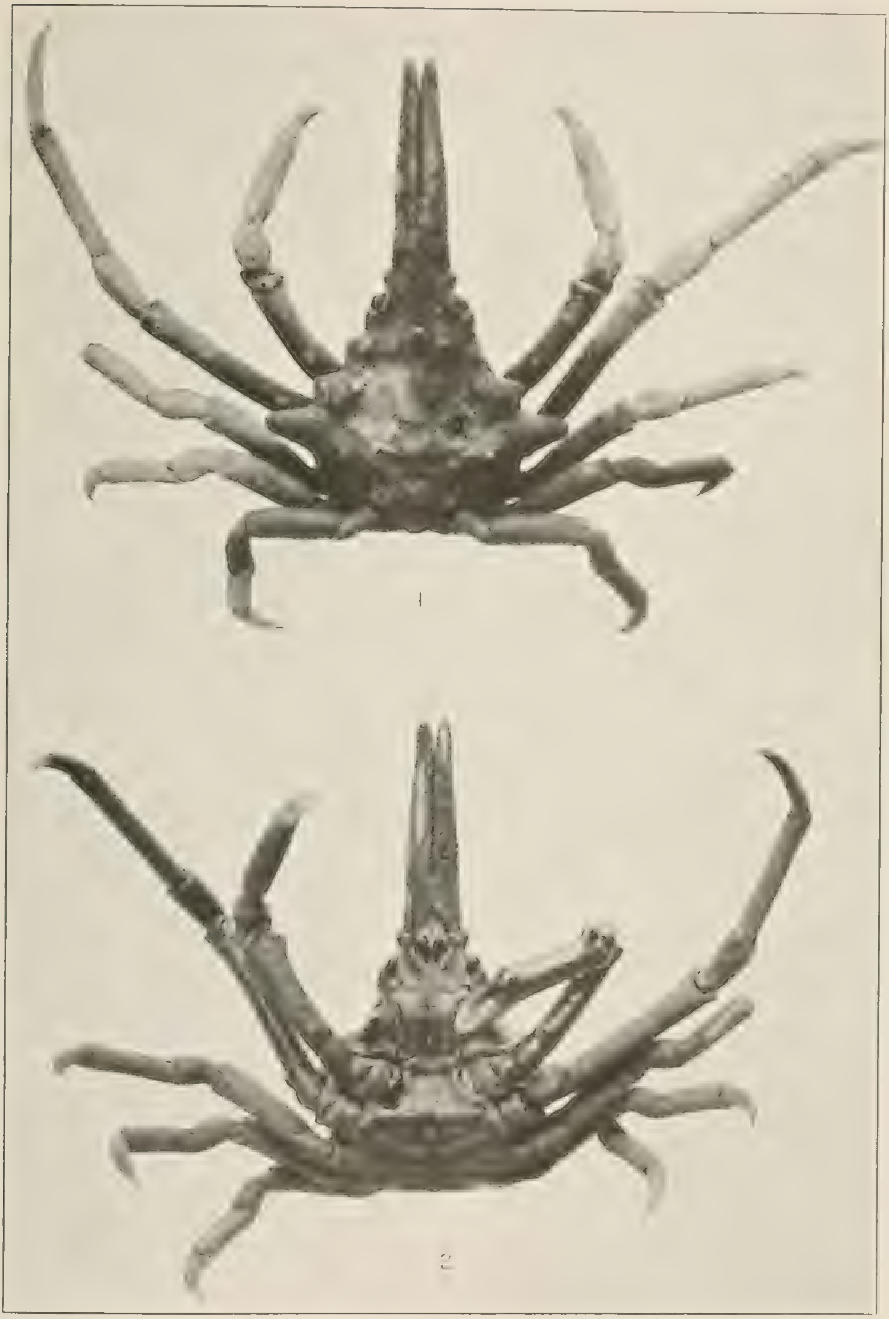
LEUCIPPA PENTAGONA. (PAGE 184)

FOR EXPLANATION OF PLATE SEE PAGE 571



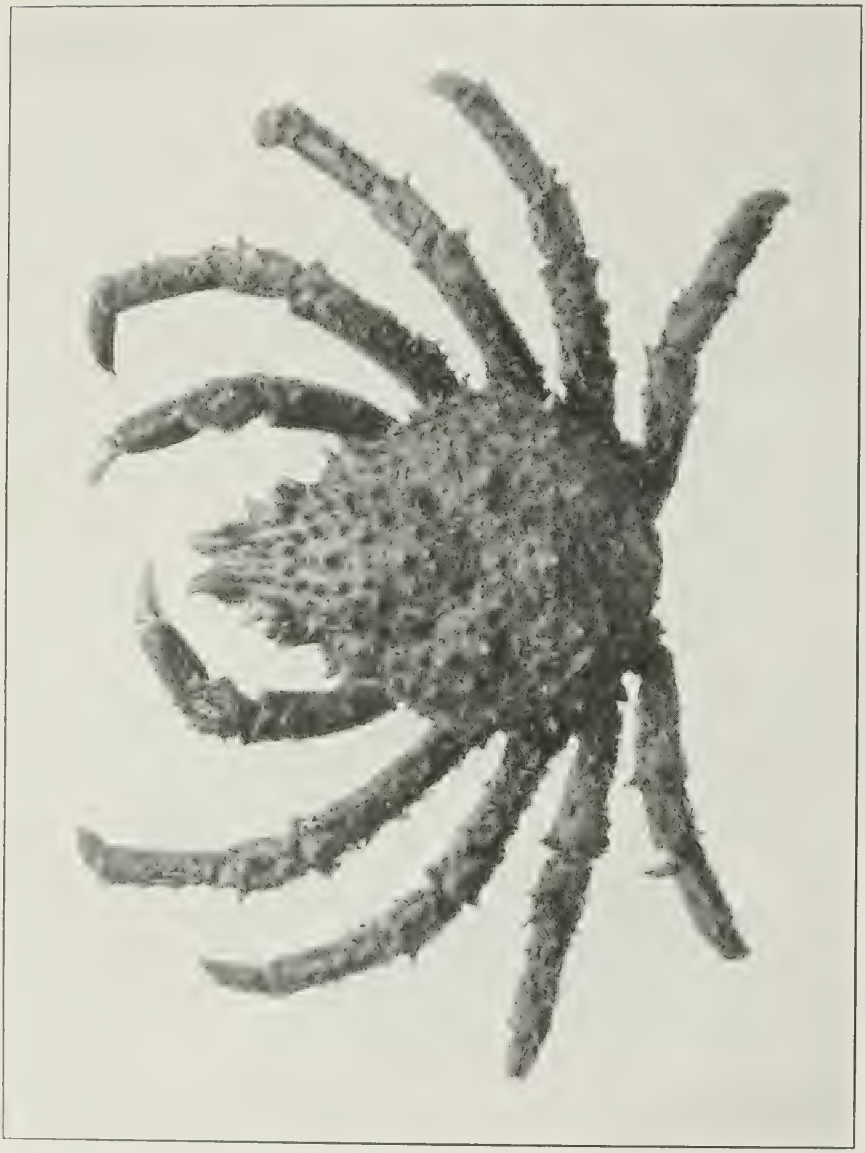
SPHENOCARCINUS CORROSUS. (PAGE 187)

FOR EXPLANATION OF PLATE SEE PAGE 571



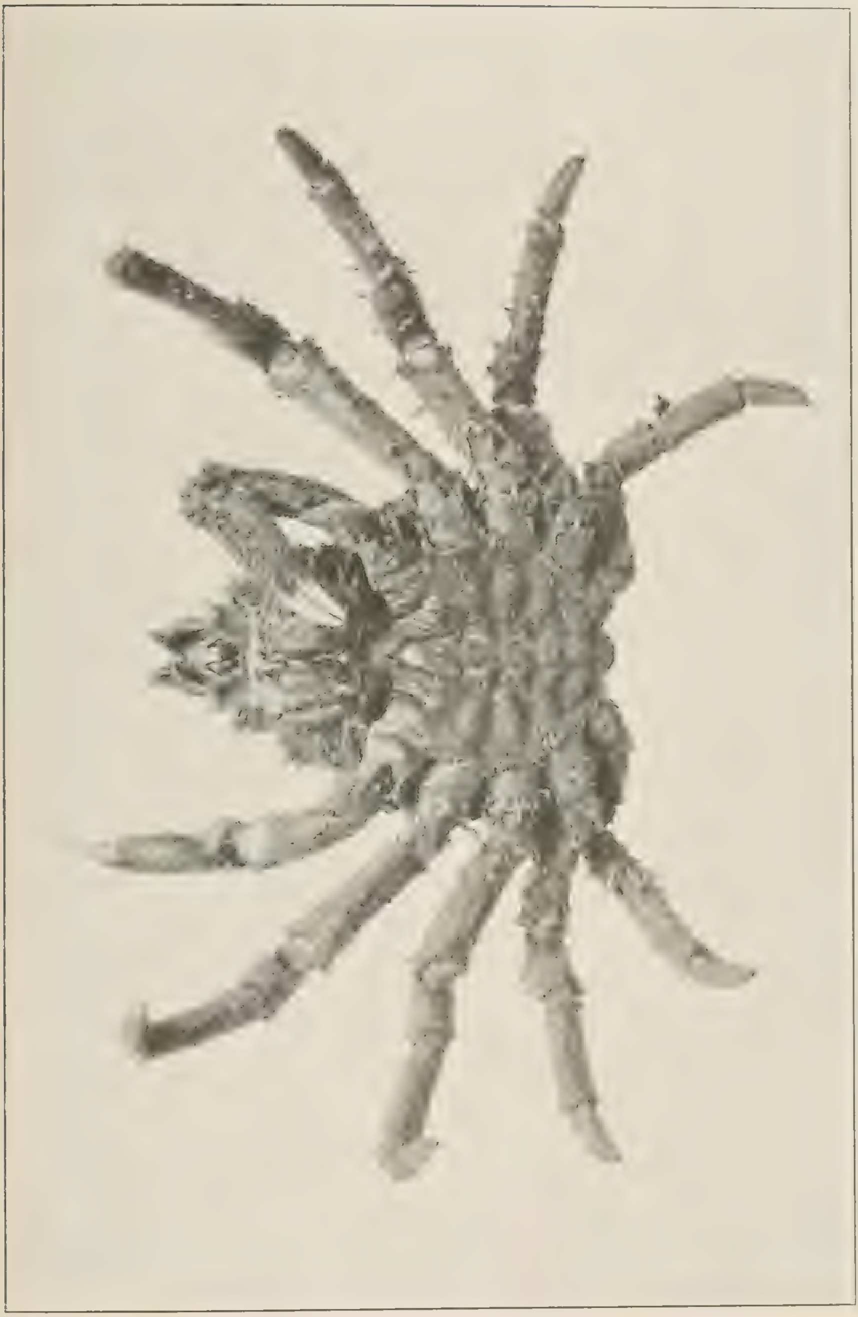
SPHENOCARCINUS AGASSIZI. (PAGE 188)

FOR EXPLANATION OF PLATE SEE PAGE 571



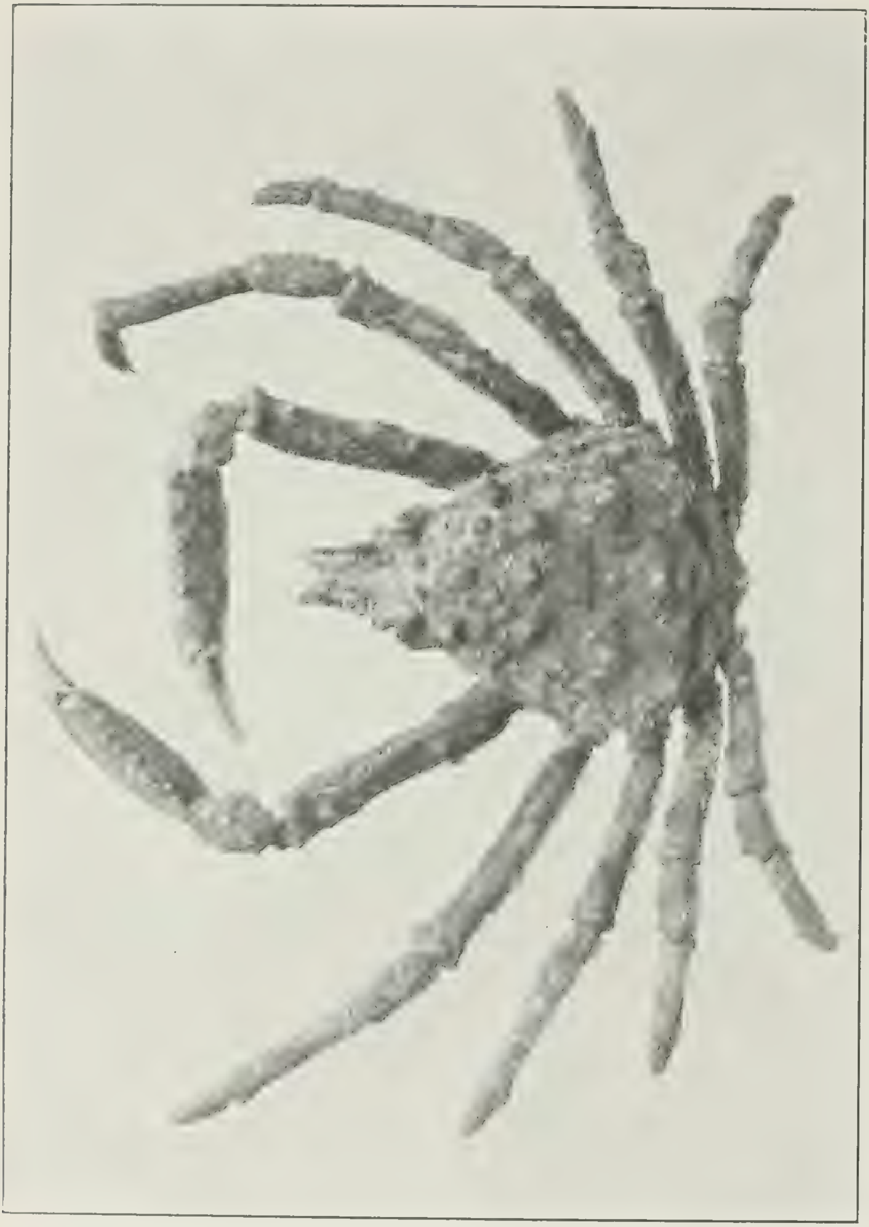
LOXORHYNCHUS GRANDIS. (PAGE 198)

FOR EXPLANATION OF PLATE SEE PAGE 571



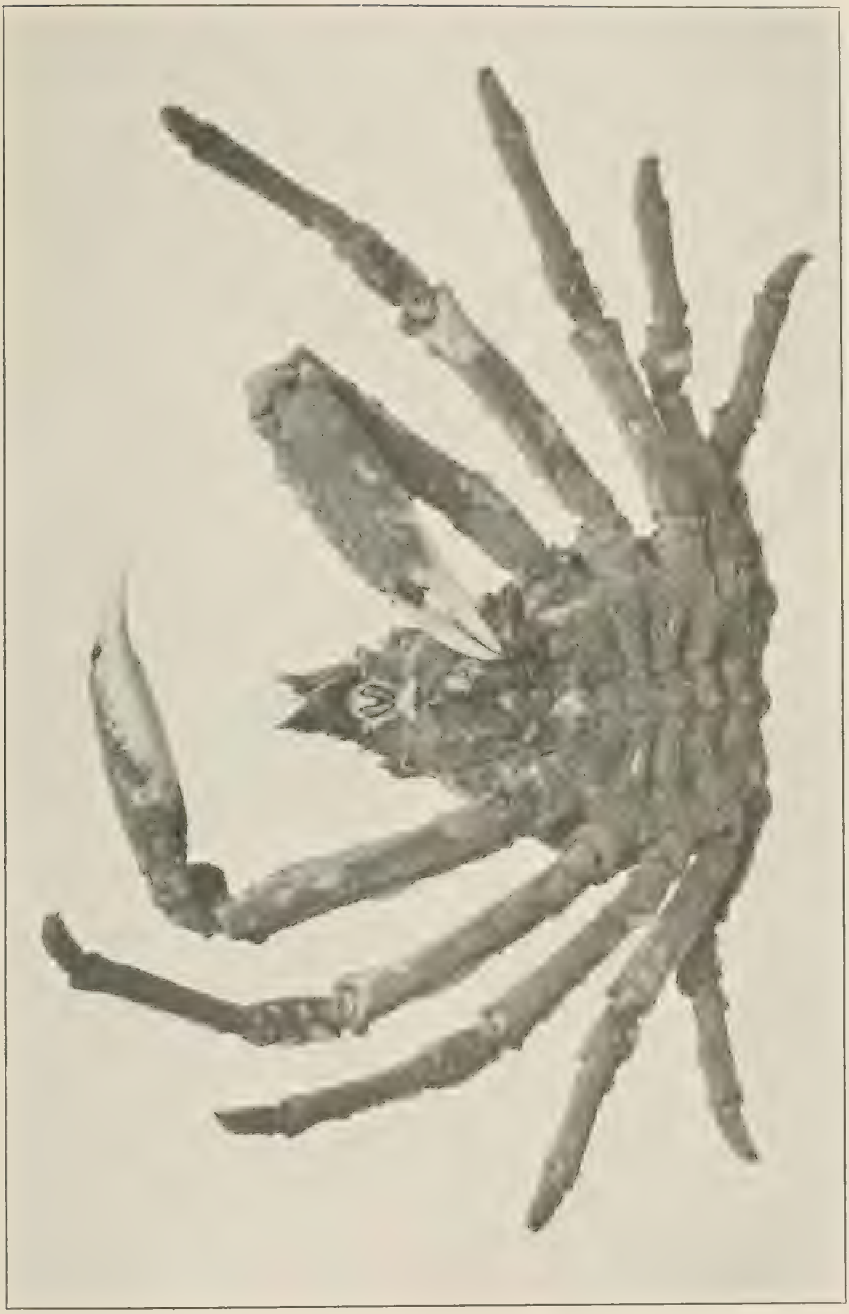
LOXORHYNCHUS GRANDIS. (PAGE 198)

FOR EXPLANATION OF PLATE SEE PAGE 571



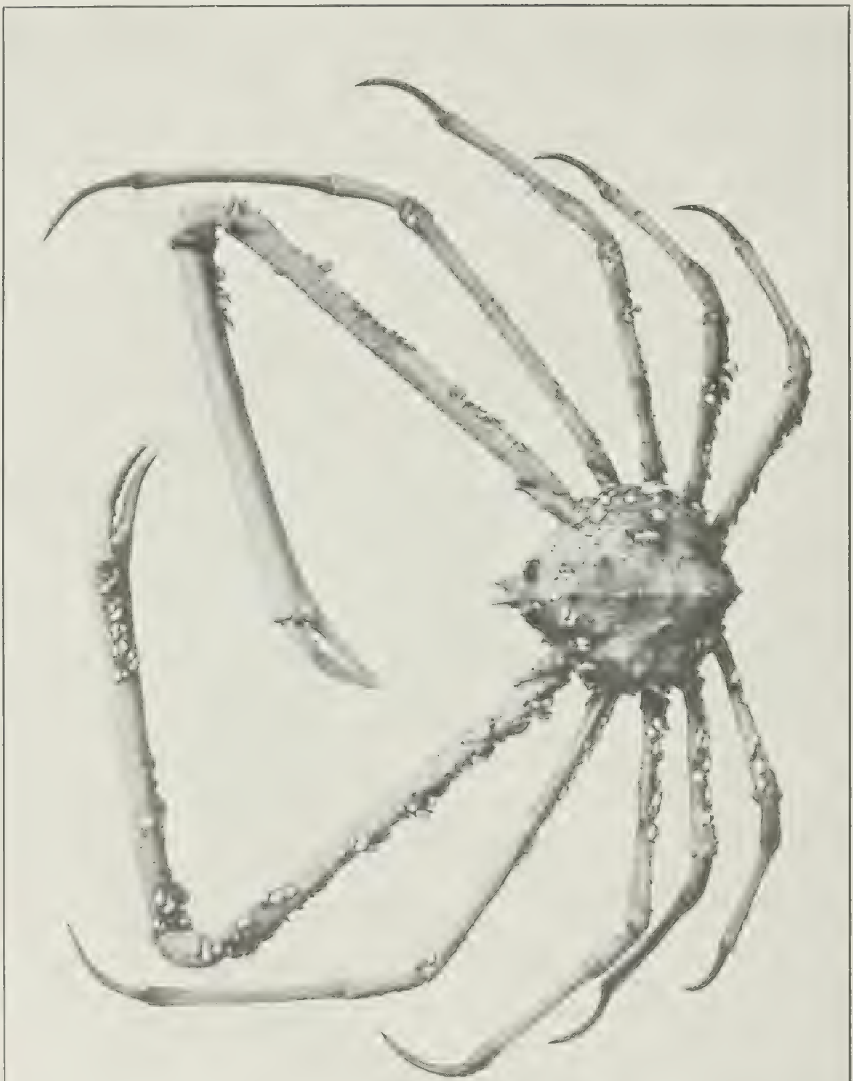
Loxorhynchus crispatus. (Page 200)

For explanation of plate see page 571



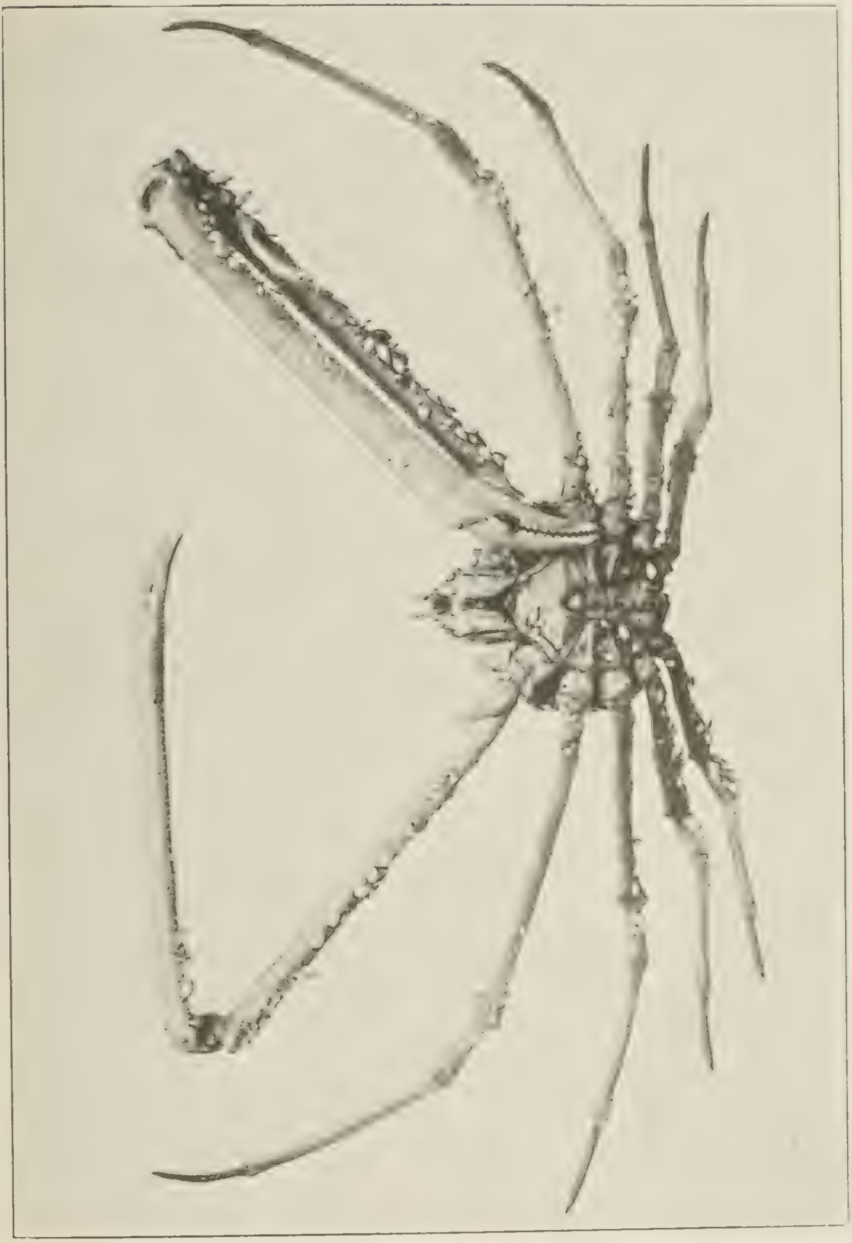
LOXORHYNCHUS CRISPATUS. (PAGE 200)

FOR EXPLANATION OF PLATE SEE PAGE 572



ROCHINIA CRASSA. (PAGE 210)

FOR EXPLANATION OF PLATE SEE PAGE 572



ROCHINIA CRASSA. (PAGE 210)

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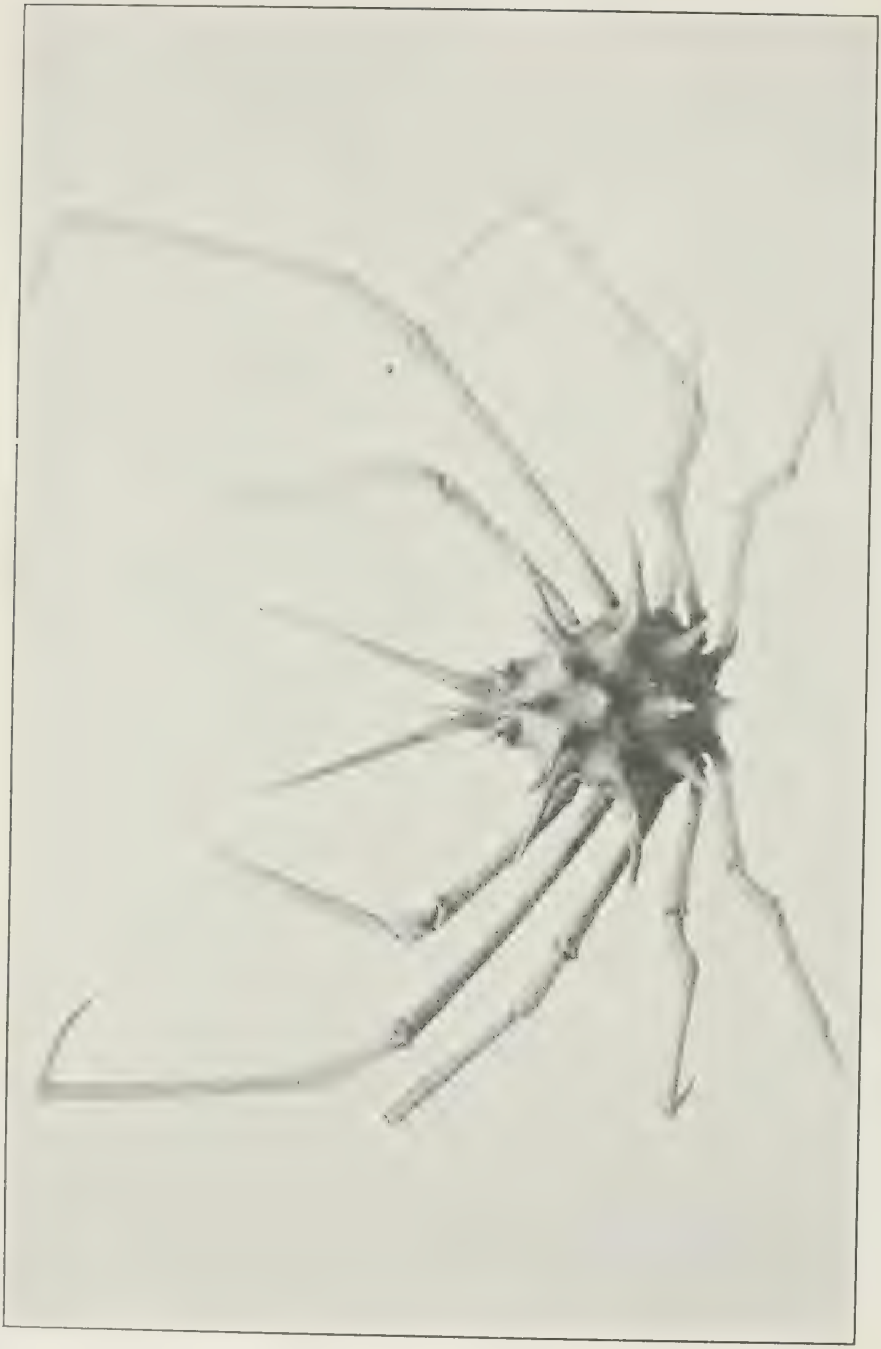

ROCHINIA HYSTRIX. (PAGE 214)

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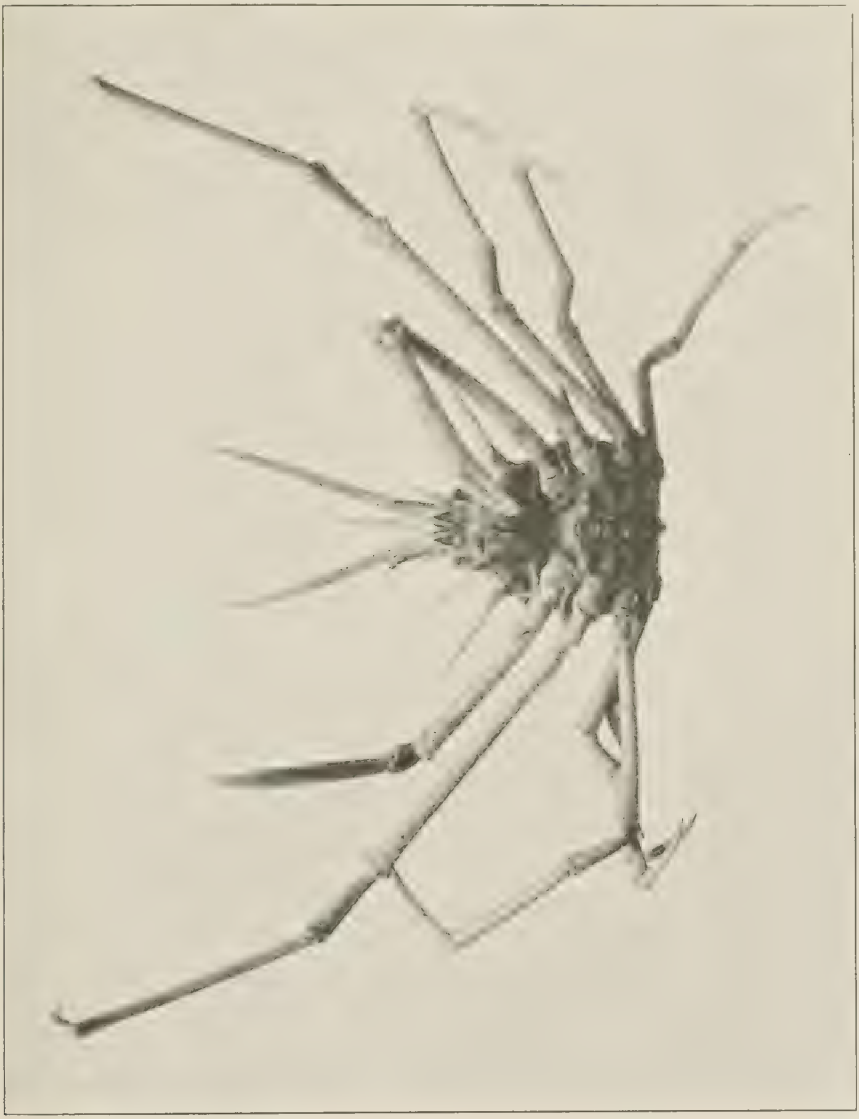
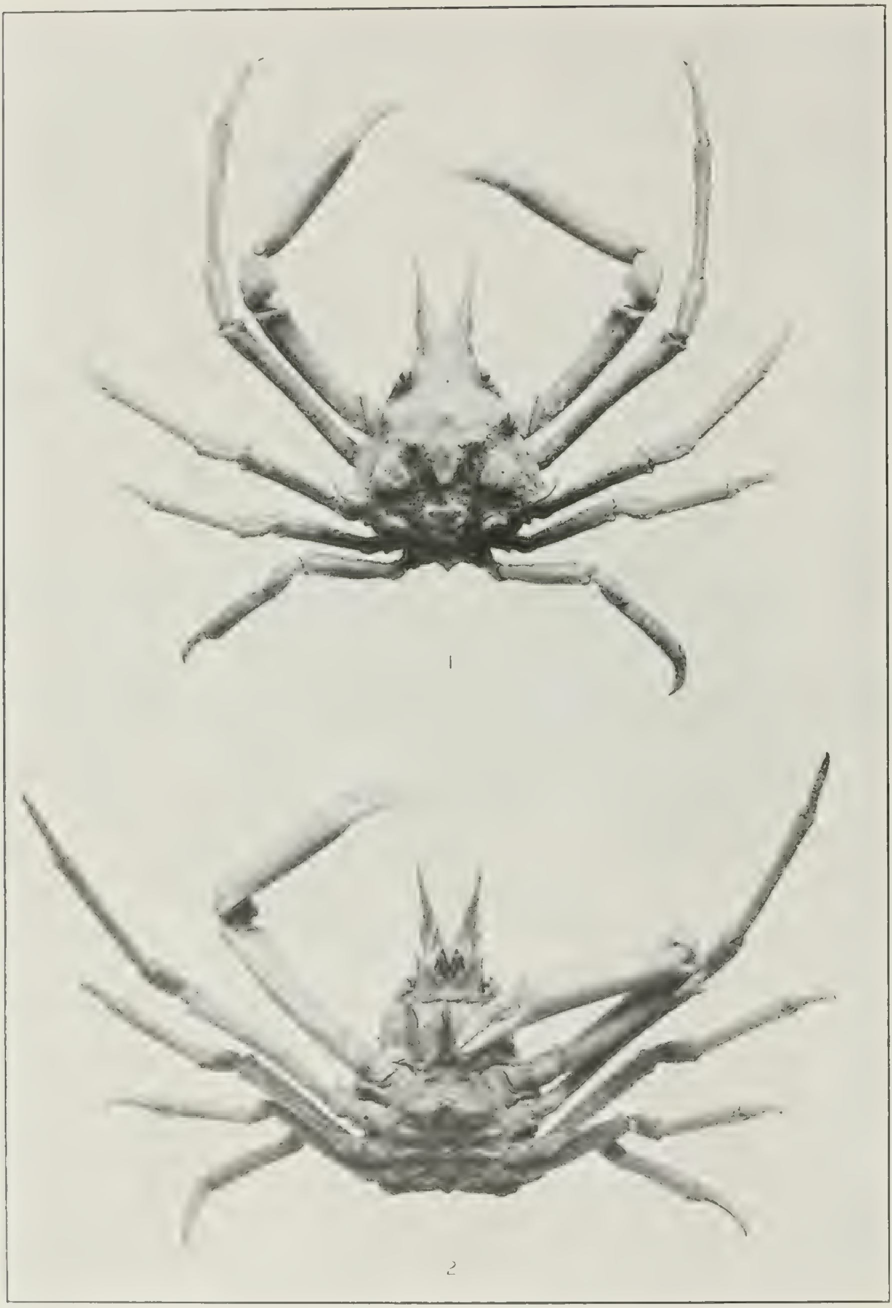


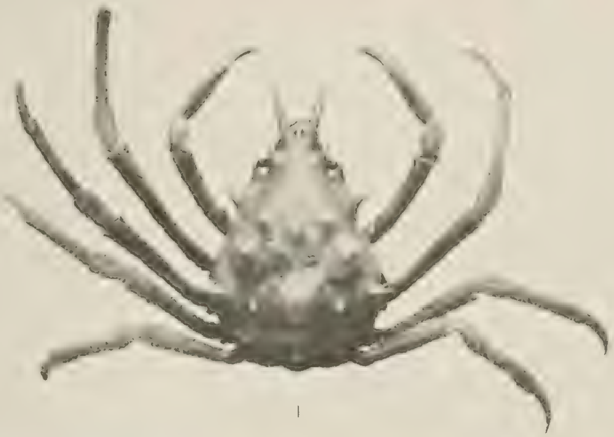
ROCHINIA HYSTRIX. (PAGE 214)

FOR EXPLANATION OF PLATE SEE PAGE 572



ROCHINIA UMBONATA. (PAGE 222)

FOR EXPLANATION OF PLATE SEE PAGE 572



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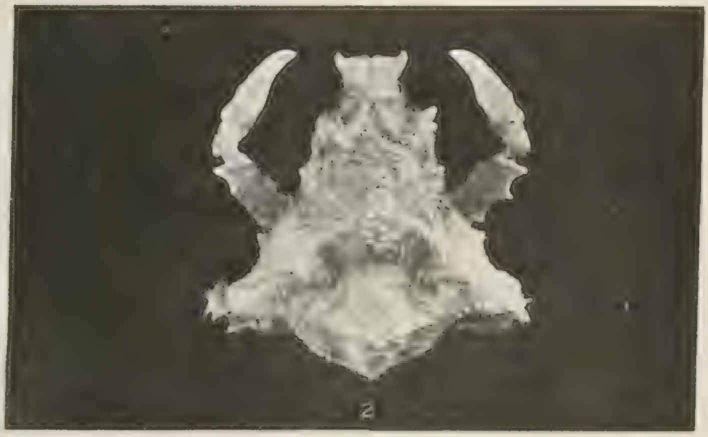

2

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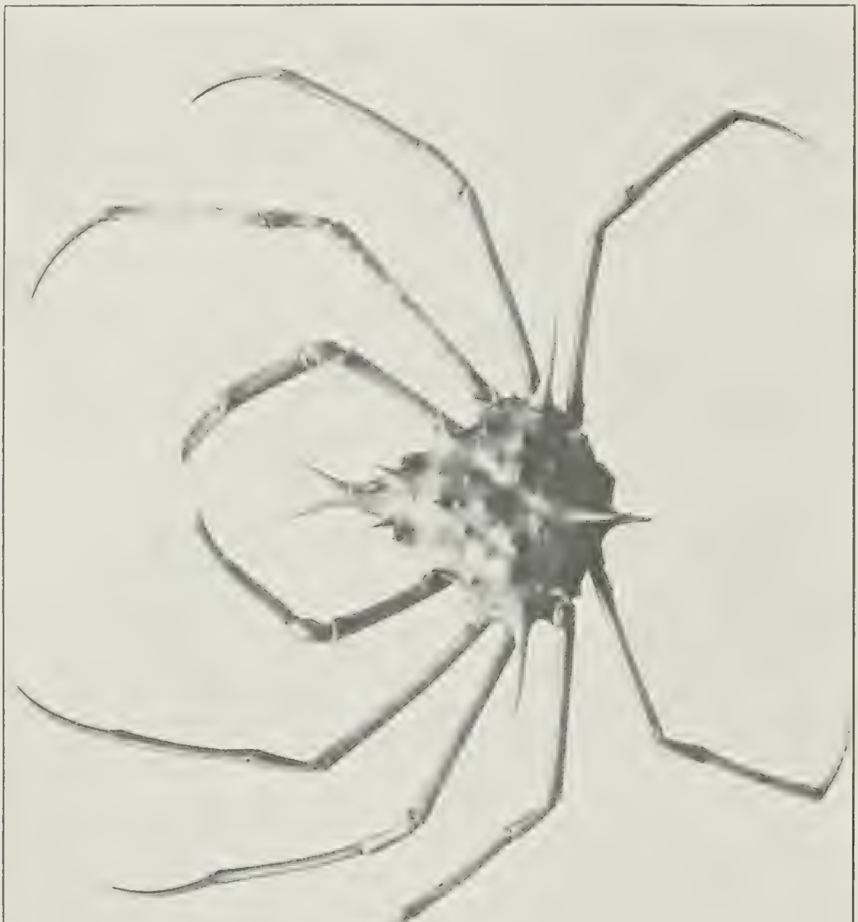
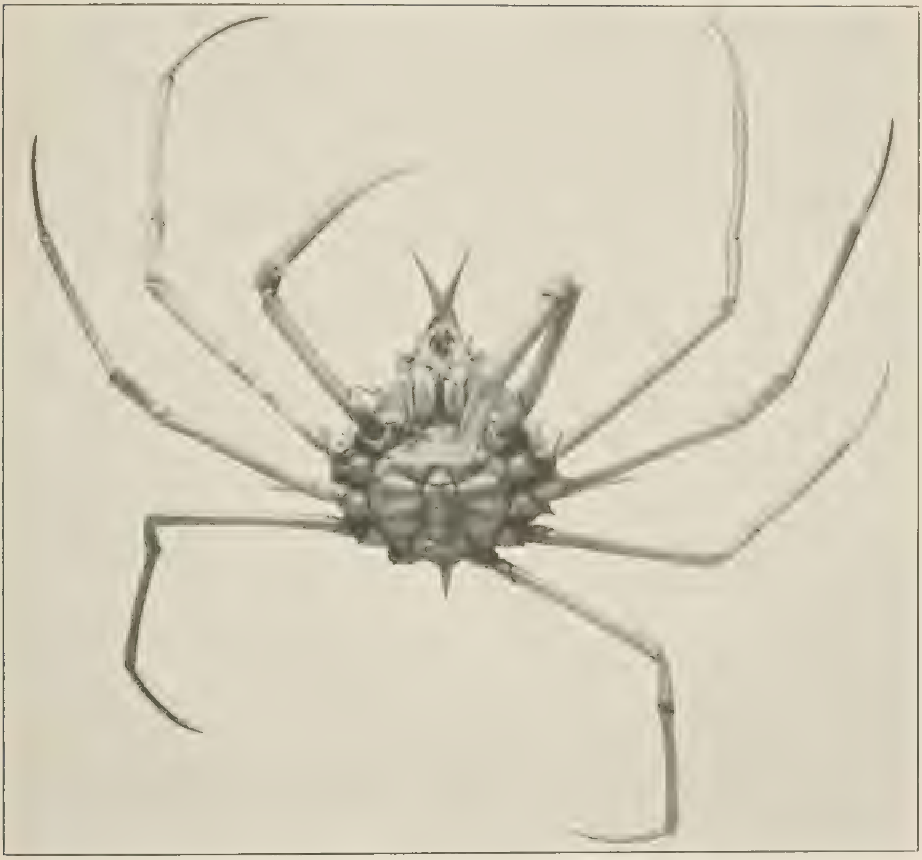
1. Rochinia umbonata. (Page 222.) 2. Lissa brasiliensis. (Page 335.
3. 4. L. bicarinata. (Page 332)

For explanation of plate see page 572



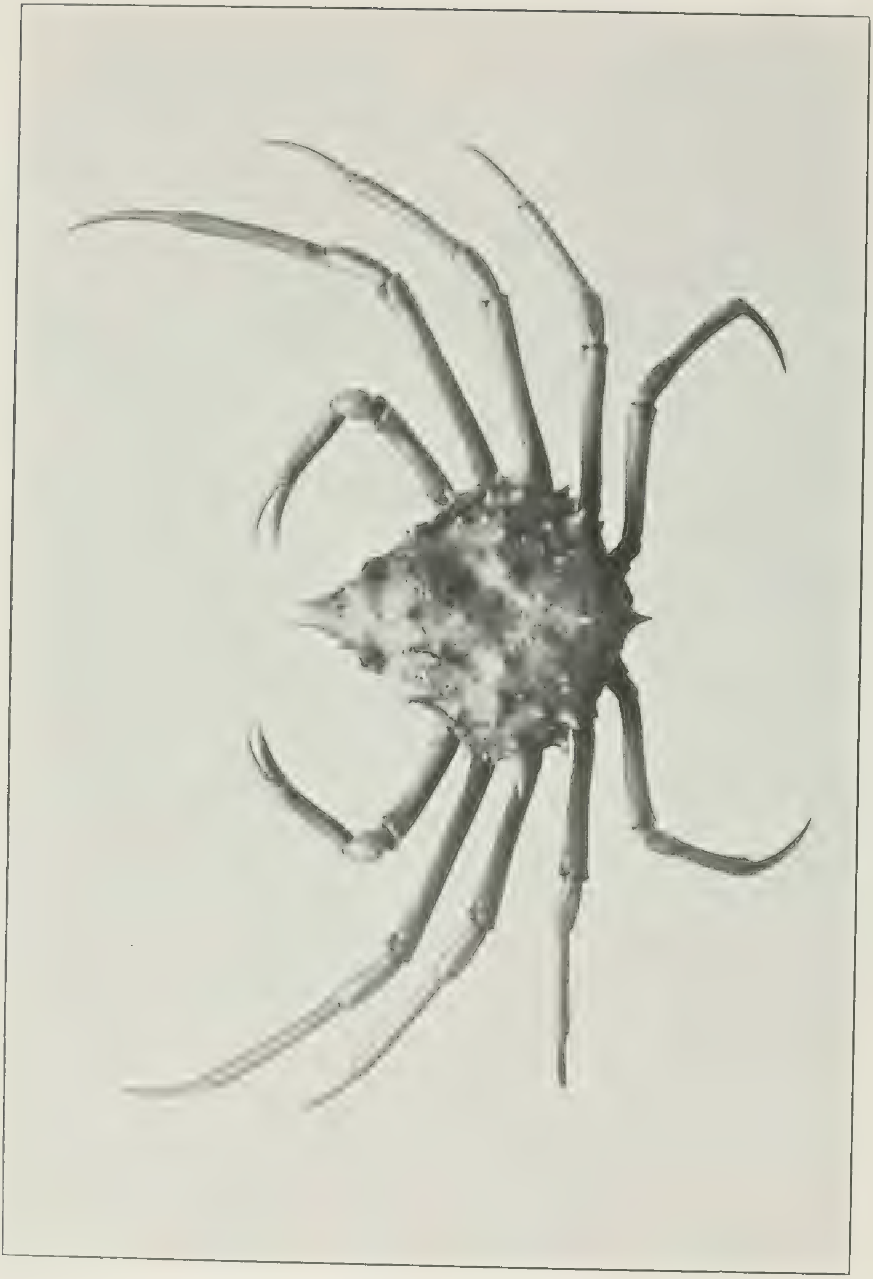
LIBIDOCLAEA SMITHII. (PAGE 226)

FOR EXPLANATION OF PLATE SEE PAGE 572



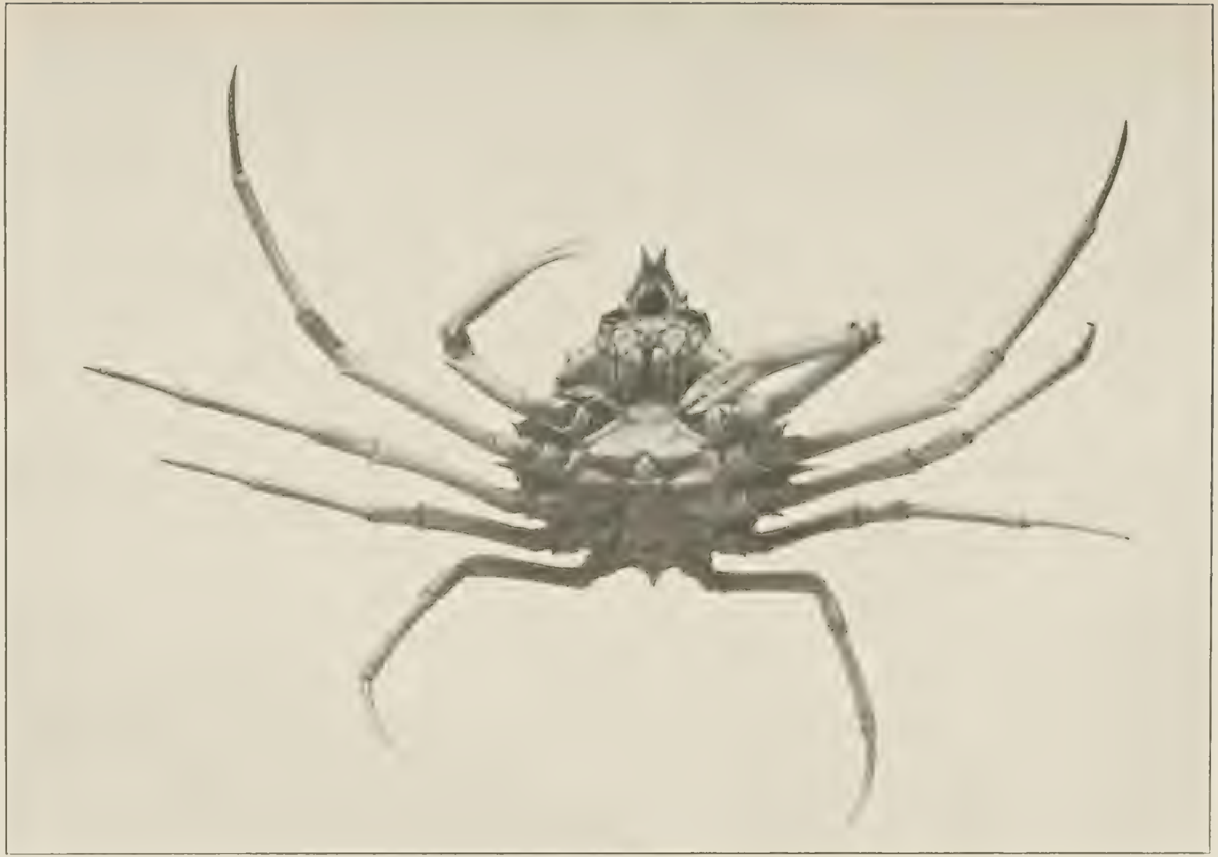
LIBIDOCLAEA SMITHII. (PAGE 226)

FOR EXPLANATION OF PLATE SEE PAGE 572



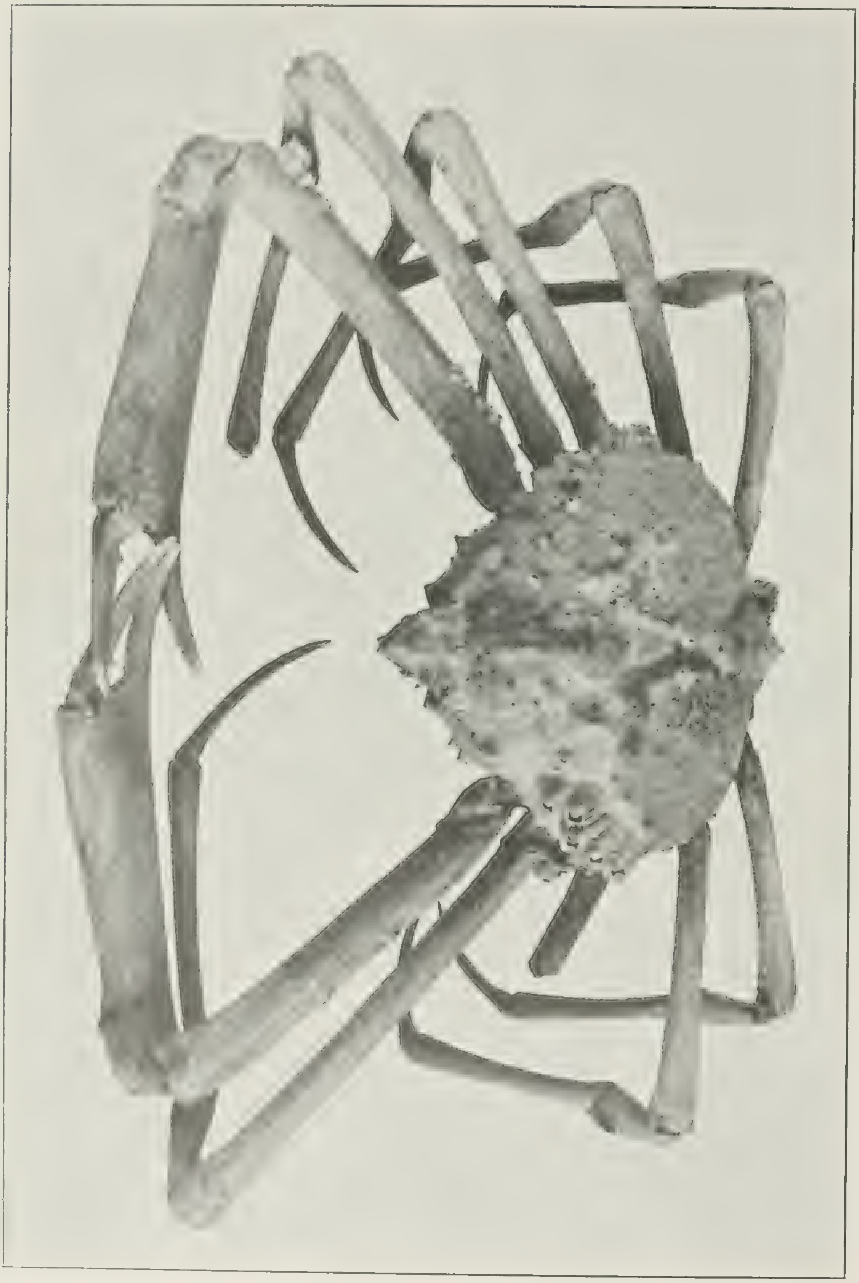
LIBIDOCLAEA GRANARIA. (PAGE 224)

FOR EXPLANATION OF PLATE SEE PAGE 572



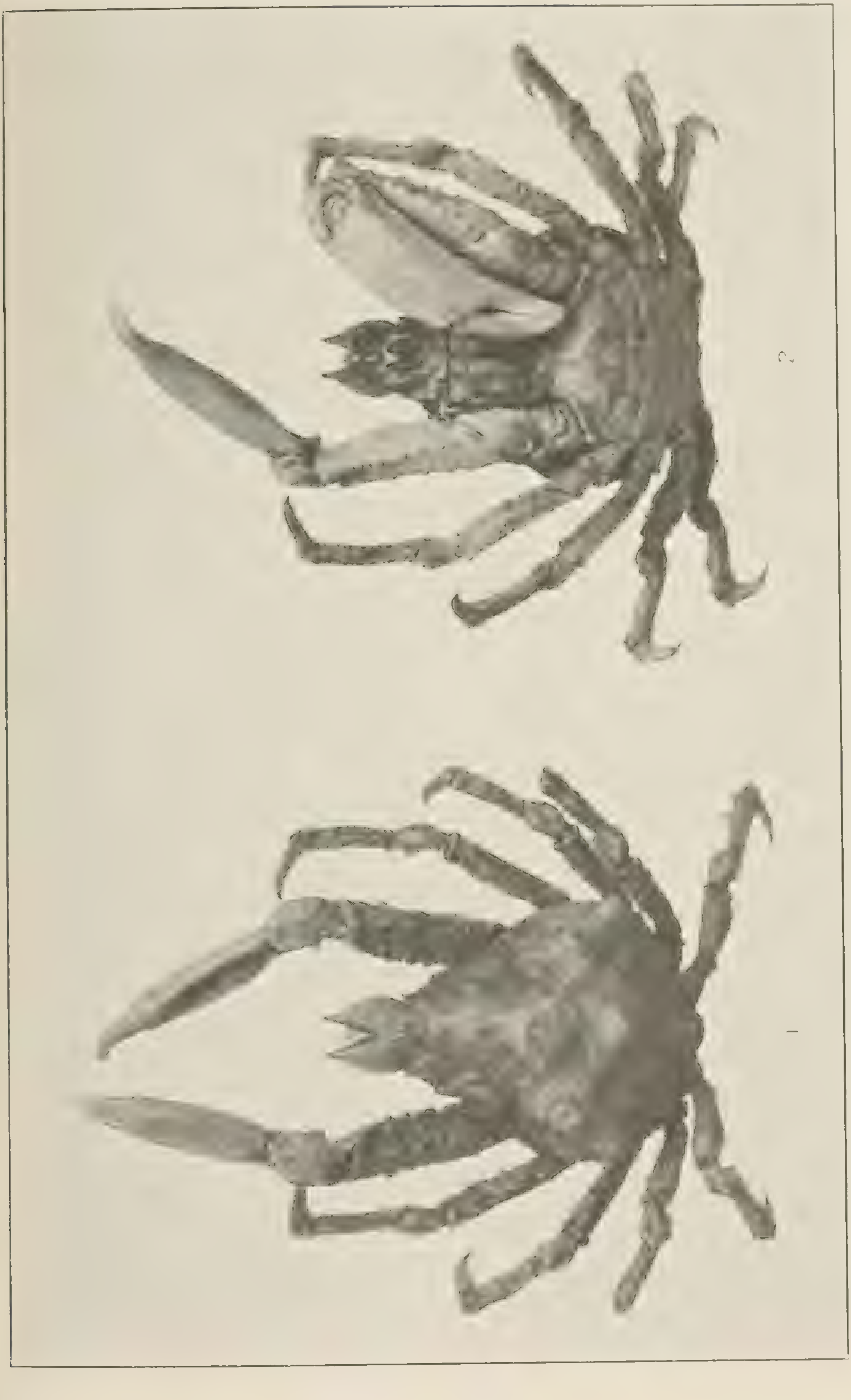
Libidoclaea granaria. (Page 224)

For explanation of plate see page 572



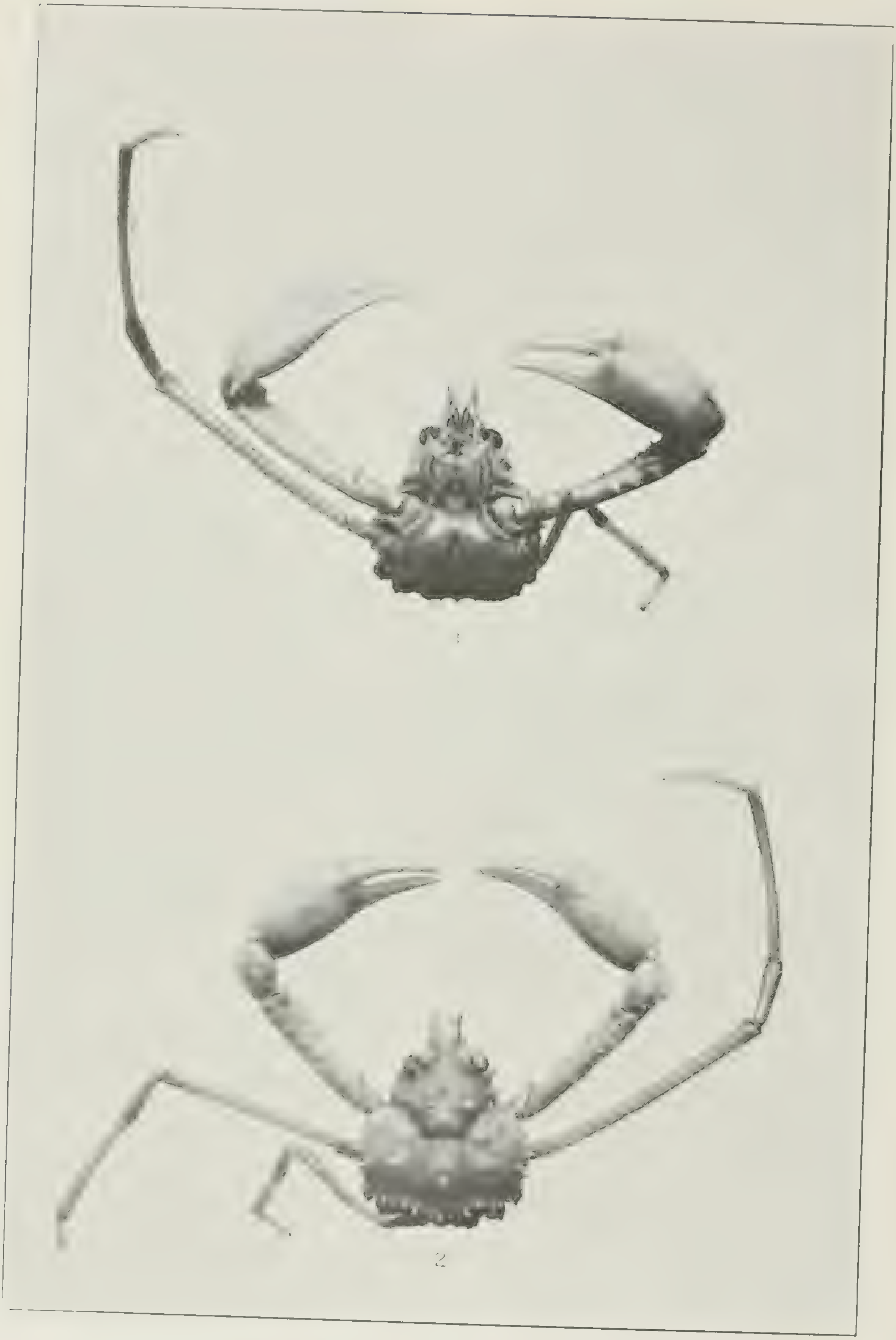
LIBIDOCLAEA GRANARIA. (PAGE 224)

FOR EXPLANATION OF PLATE SEE PAGE 572



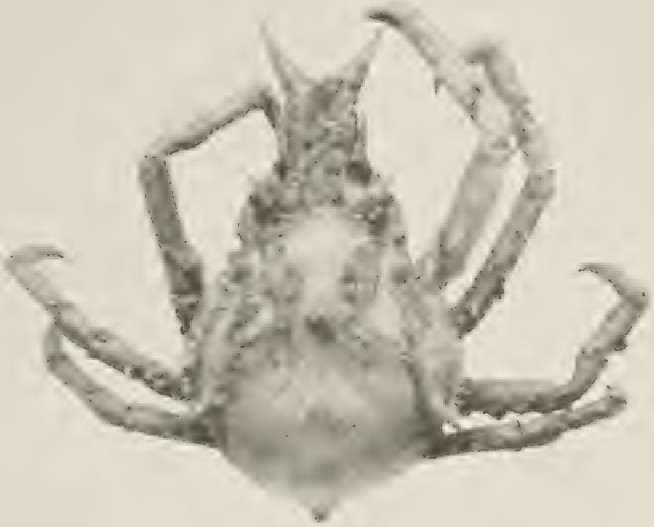
SCYRA ACUTIFRONS. (PAGE 195)

FOR EXPLANATION OF PLATE SEE PAGE 572



Trachymaia cornuta. (Page 229)

For explanation of plate see page 573



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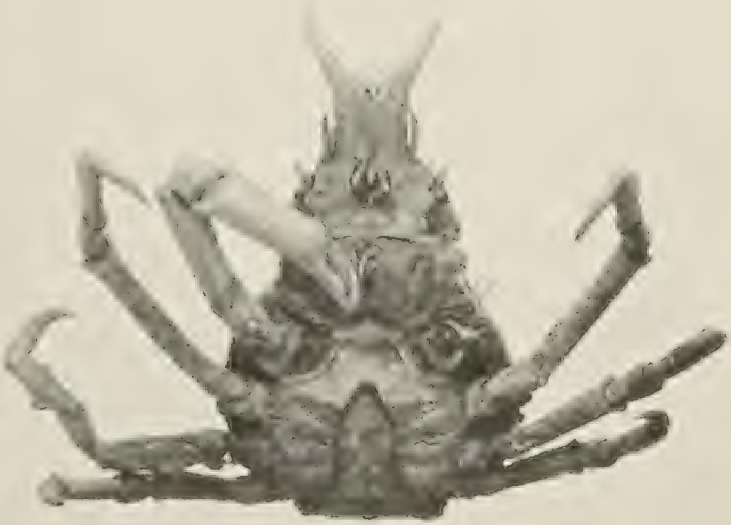

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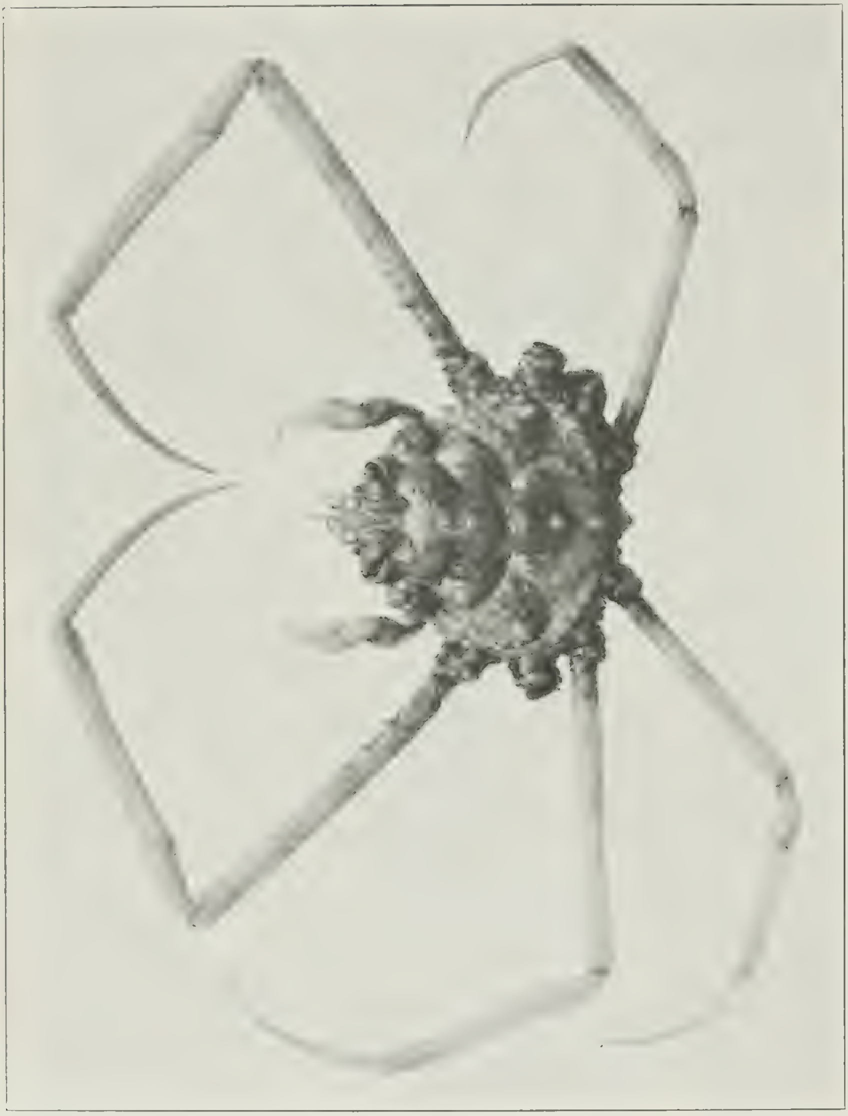
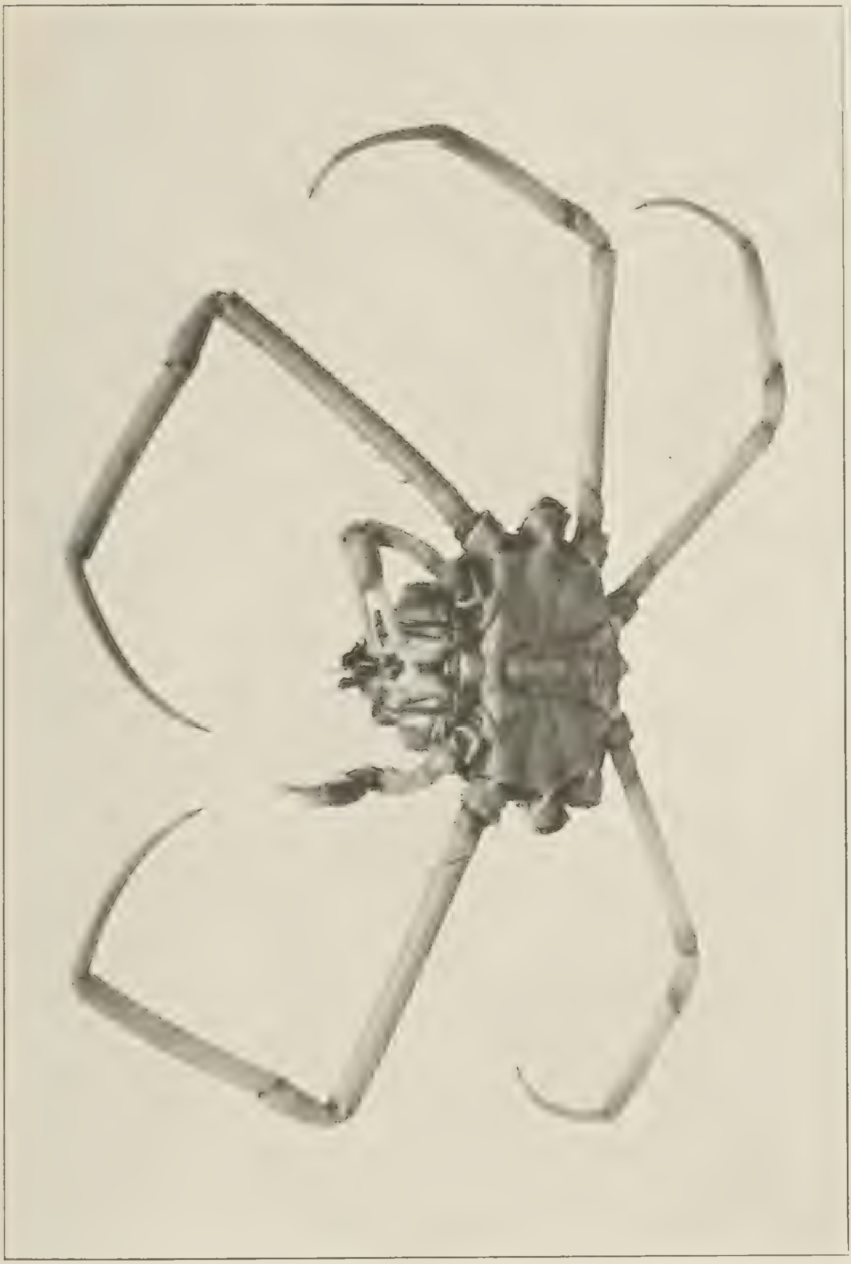
NOTOLOPAS LAMELLATUS. (PAGE 287)

FOR EXPLANATION OF PLATE SEE PAGE 573



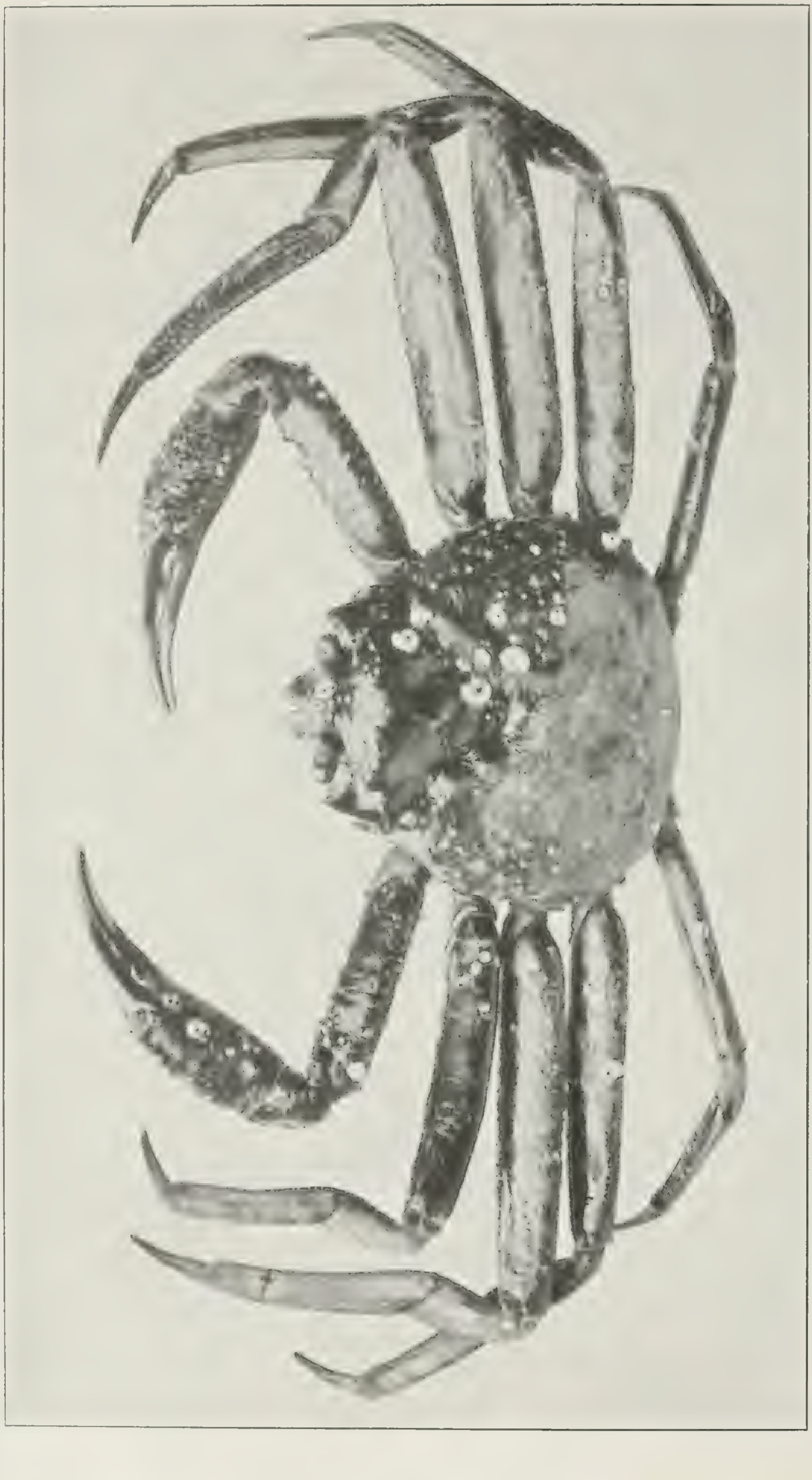
LEUROCYCLUS GRACILIPES. (PAGE 231)

FOR EXPLANATION OF PLATE SEE PAGE 573



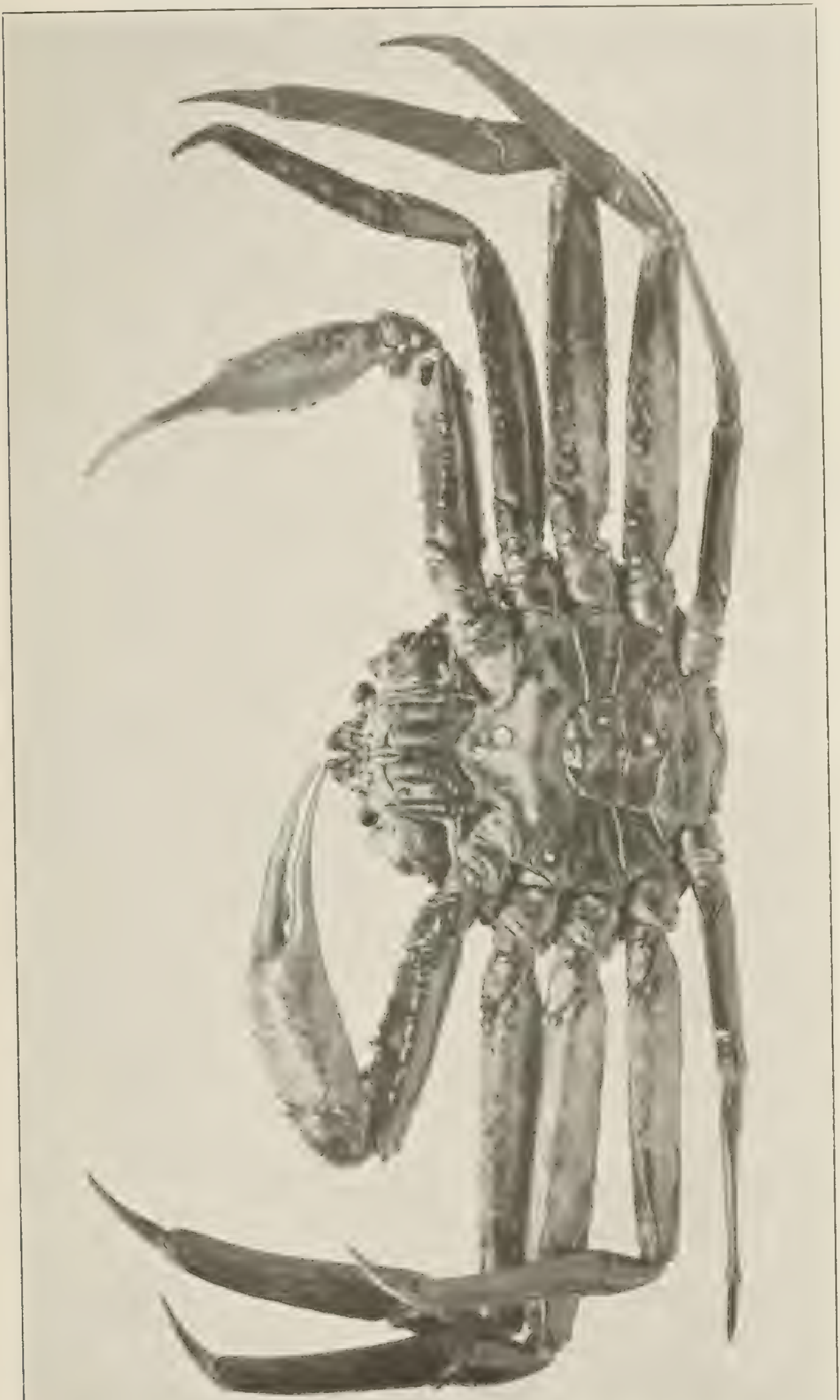
Leurocyclus gracilipes. (Page 231)

For explanation of plate see page 573



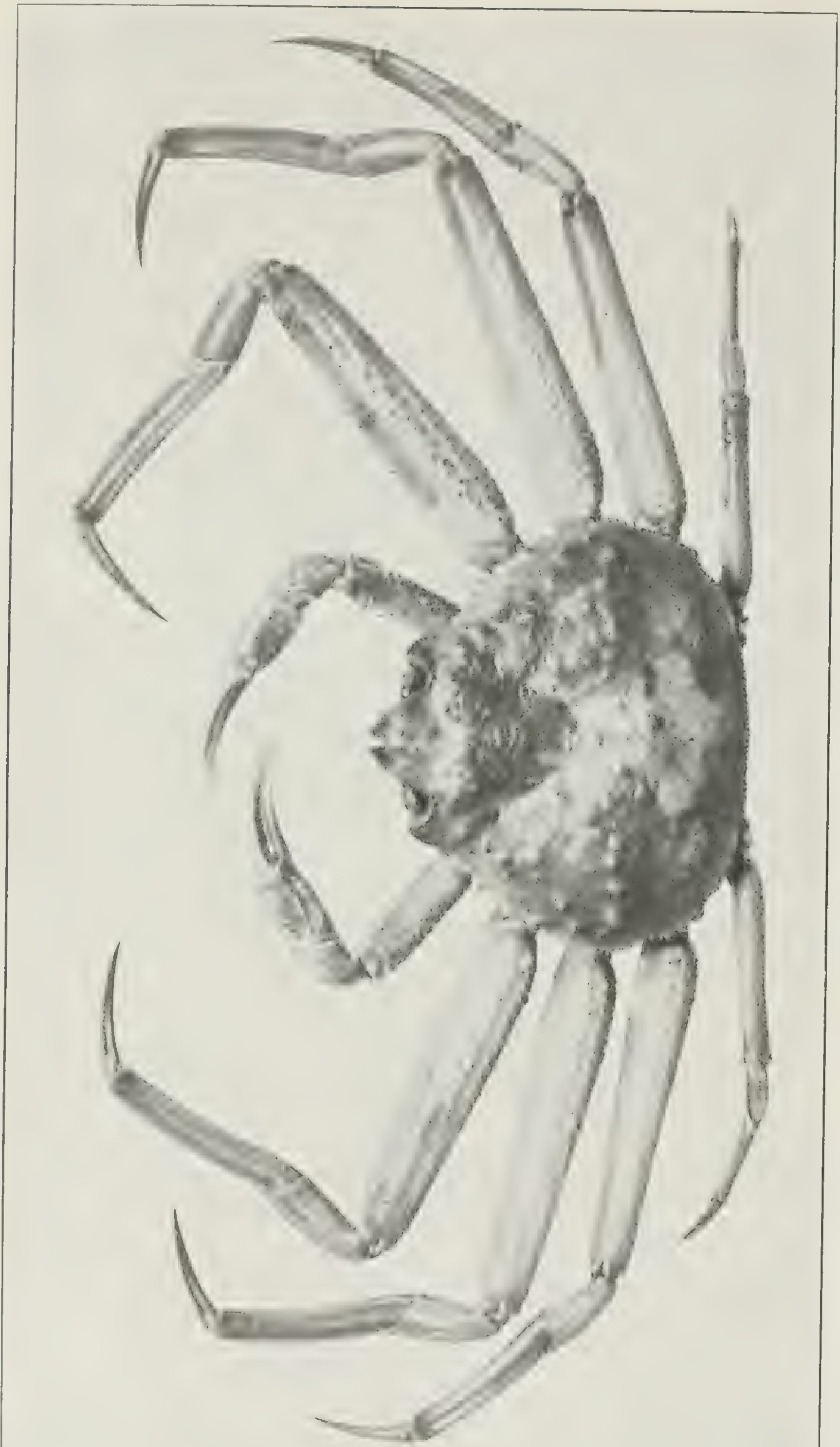
Chionoecetes opilio. (Page 233)

For explanation of plate see page 573



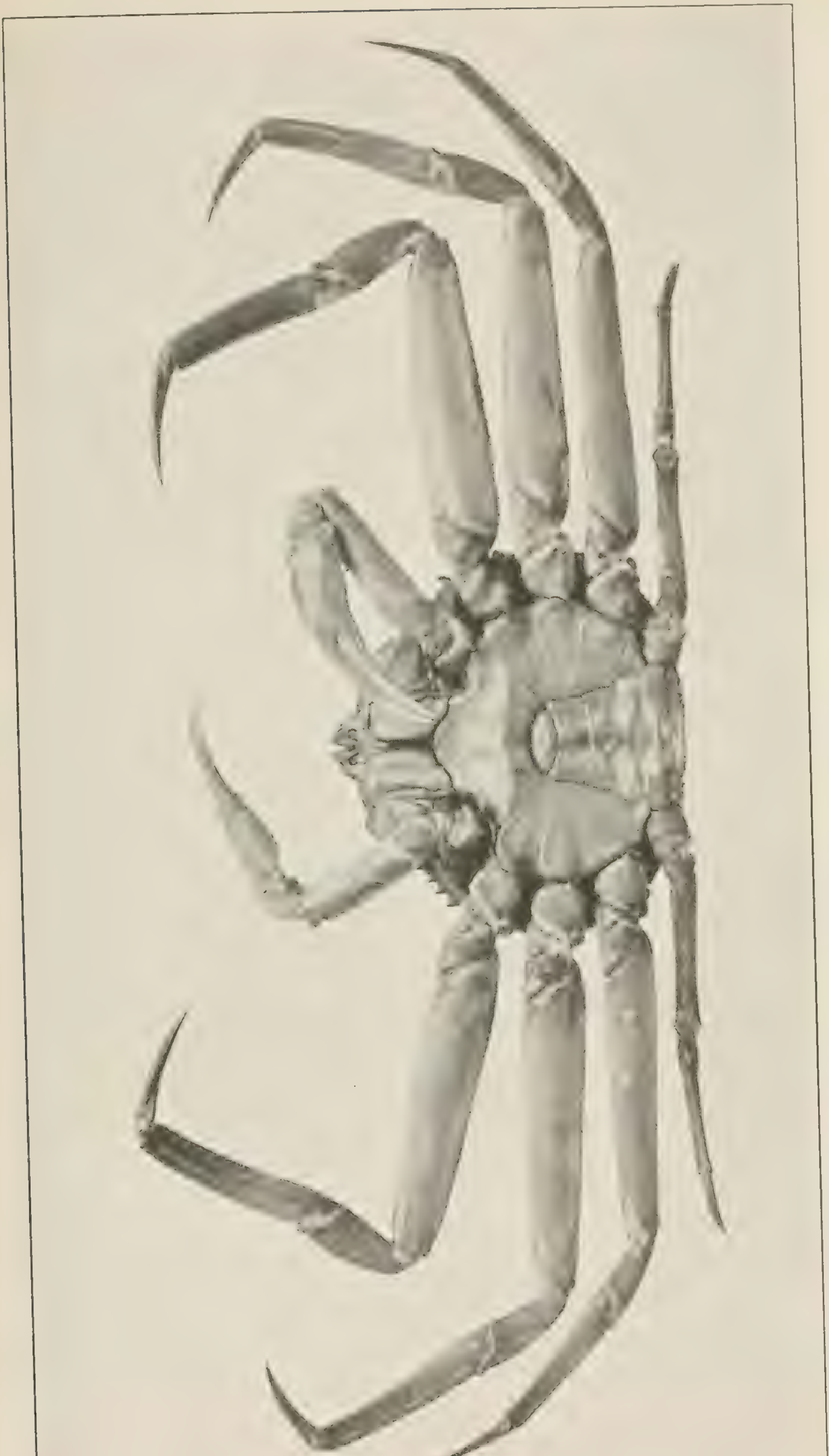
CHIONOECETES OPILIO. (PAGE 233)

FOR EXPLANATION OF PLATE SEE PAGE 573



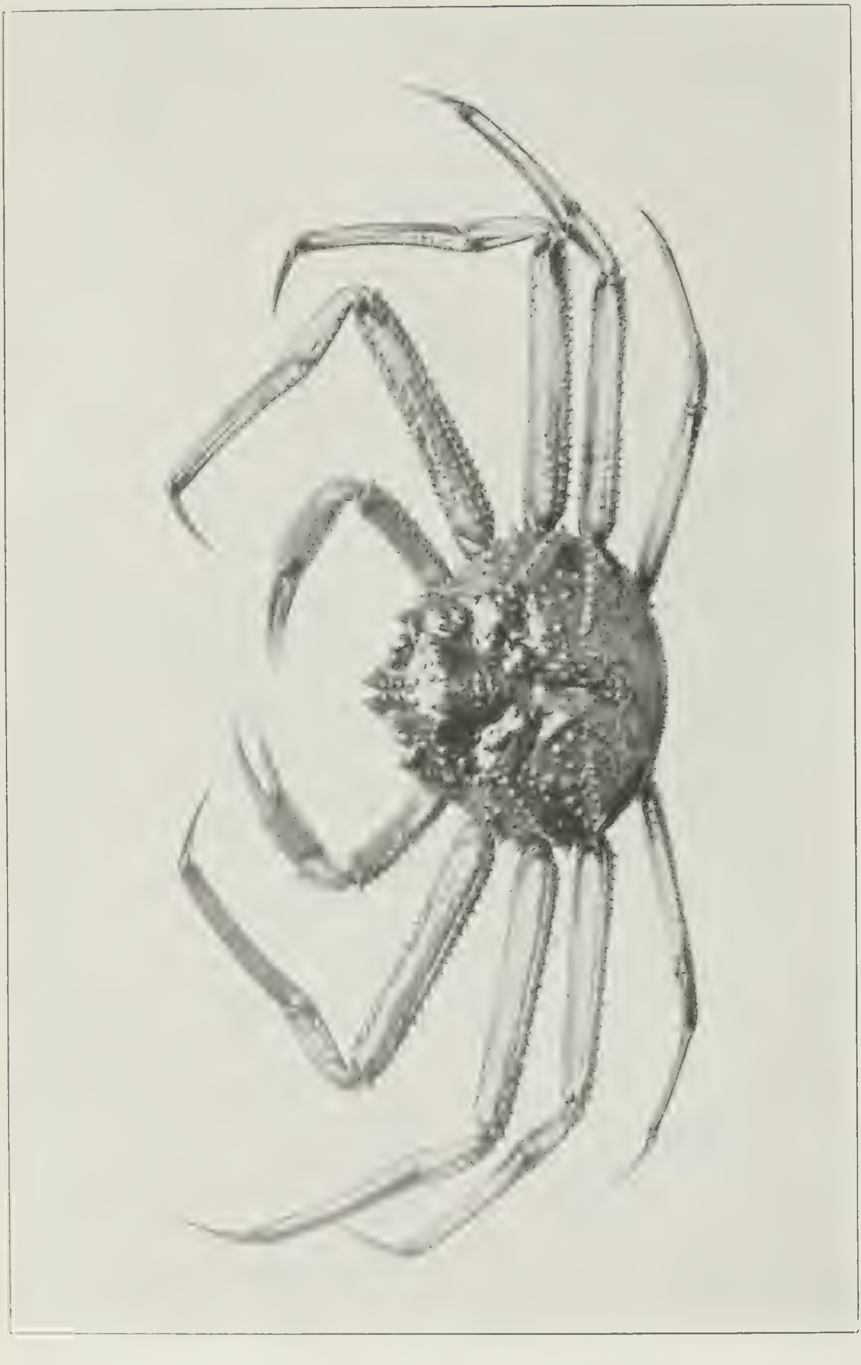
CHIONOECETES BAIRDI. (PAGE 235)

FOR EXPLANATION OF PLATE SEE PAGE 573



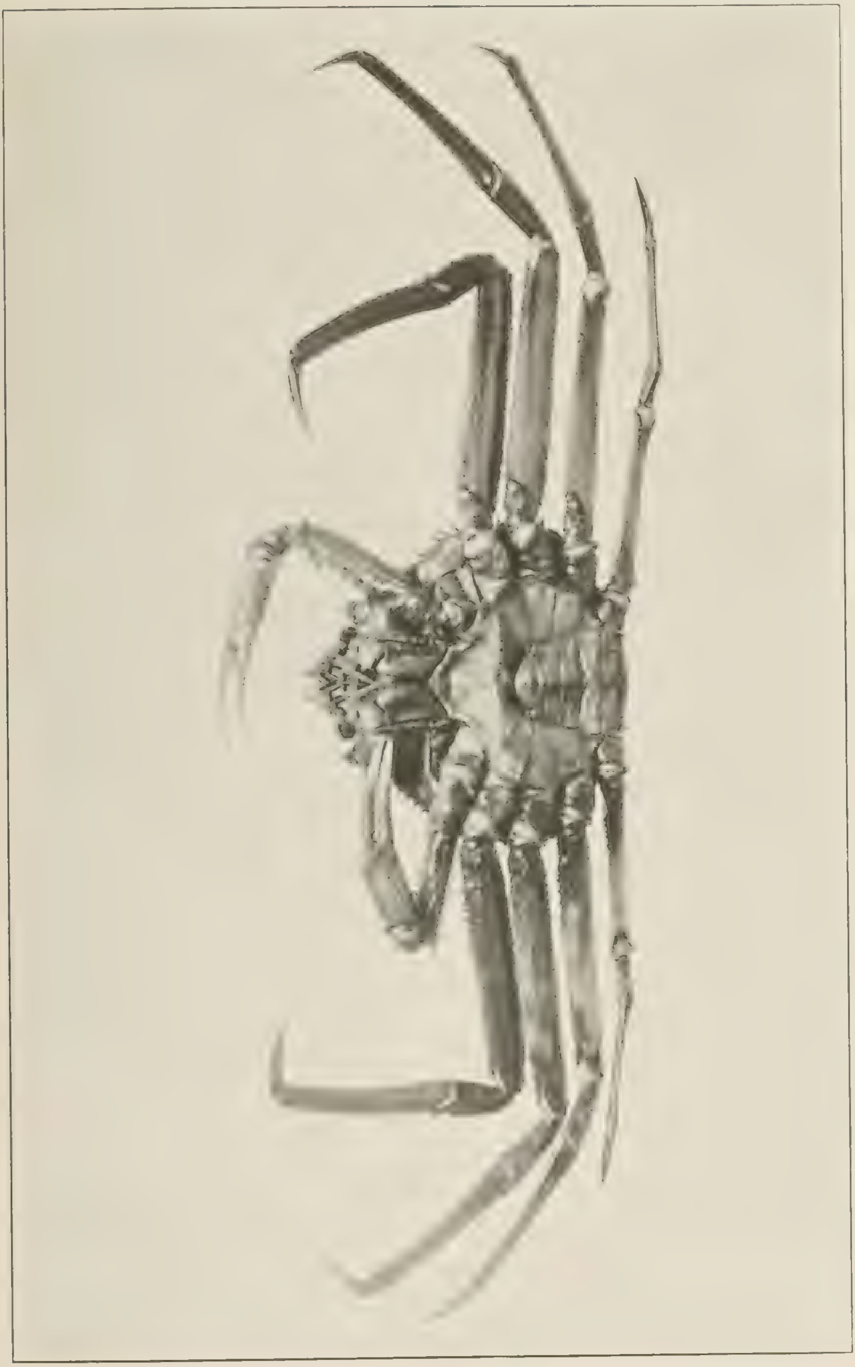
CHIONOECETES BAIRDI. (PAGE 235)

FOR EXPLANATION OF PLATE SEE PAGE 573



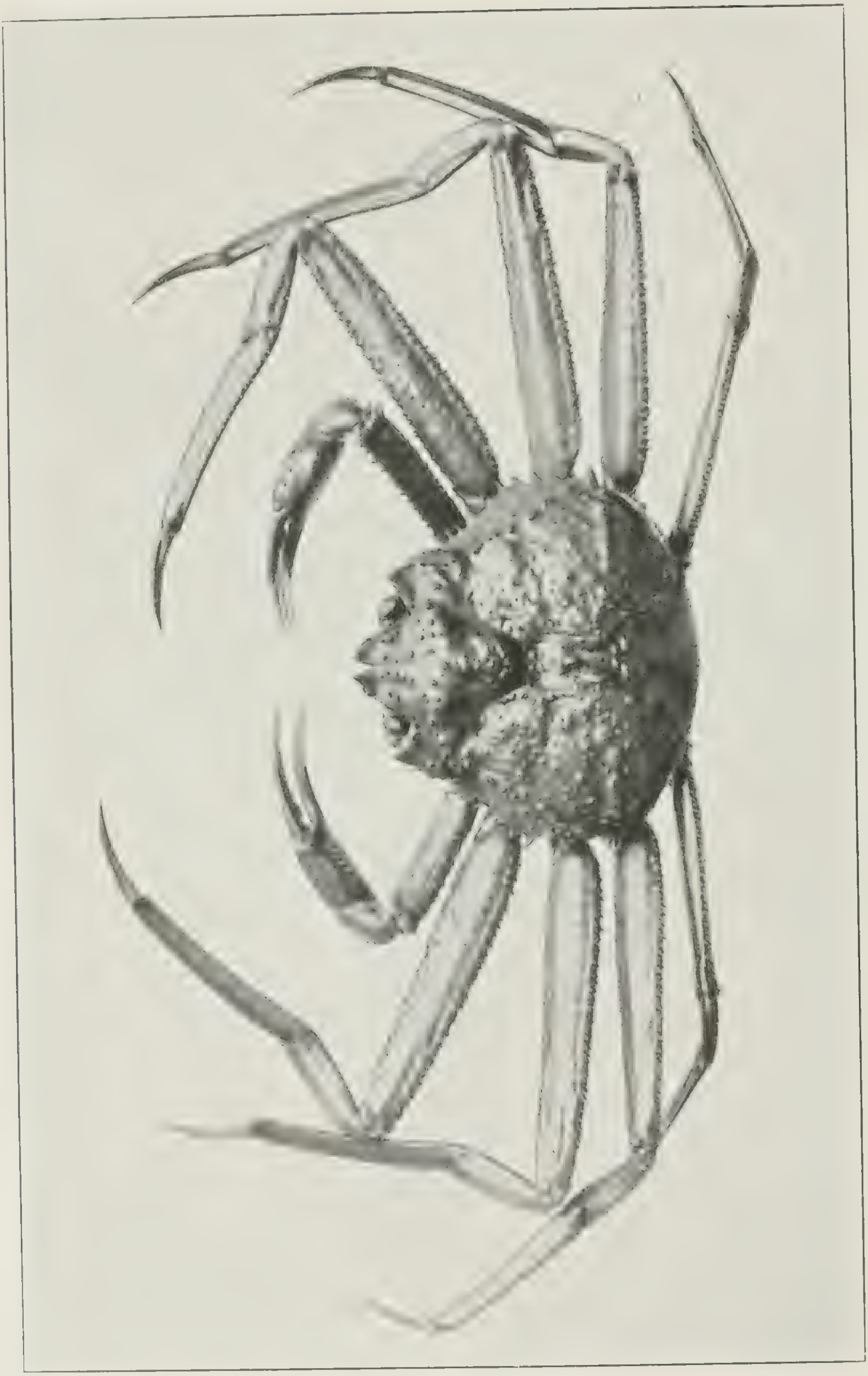
CHIONOECETES TANNERI. (PAGE 243)

FOR EXPLANATION OF PLATE SEE PAGE 573



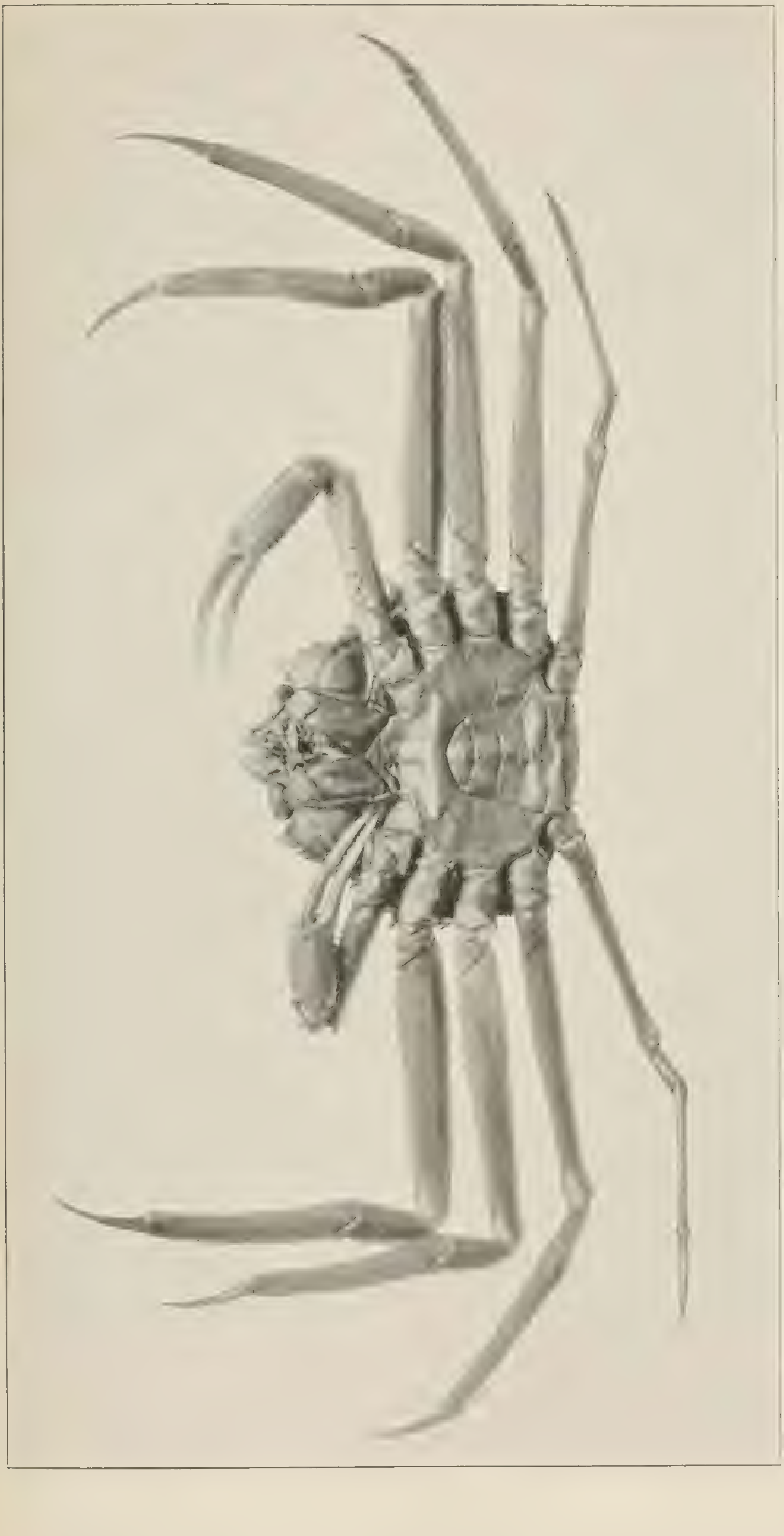
CHIONOECETES TANNERI. (PAGE 243)

FOR EXPLANATION OF PLATE SEE PAGE 573



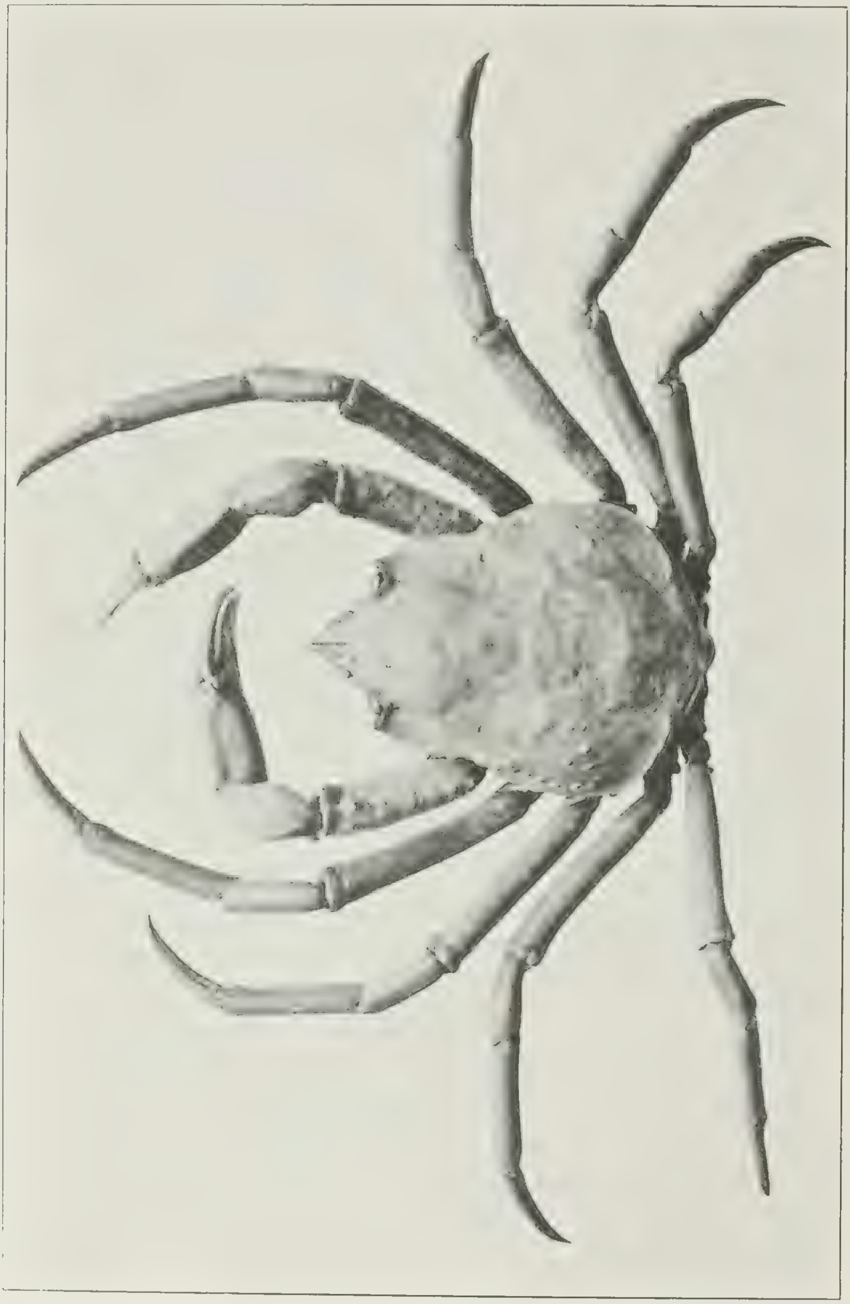
CHIONOECETES ANGULATUS. (PAGE 247)

FOR EXPLANATION OF PLATE SEE PAGE 573



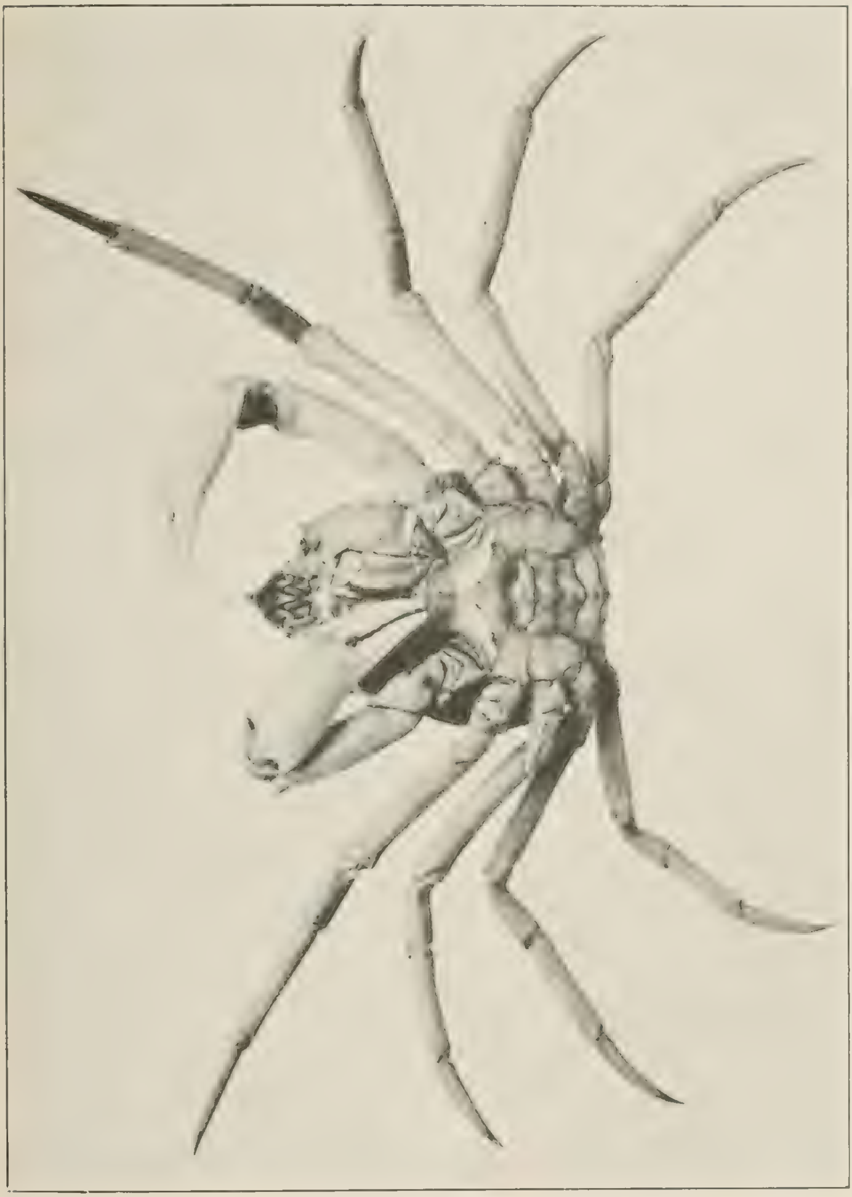
CHIONOECETES ANGULATUS. (PAGE 247)

FOR EXPLANATION OF PLATE SEE PAGE 573



HYAS ARANEUS. (PAGE 253)

FOR EXPLANATION OF PLATE SEE PAGE 573



HYAS ARANEUS. (PAGE 253)

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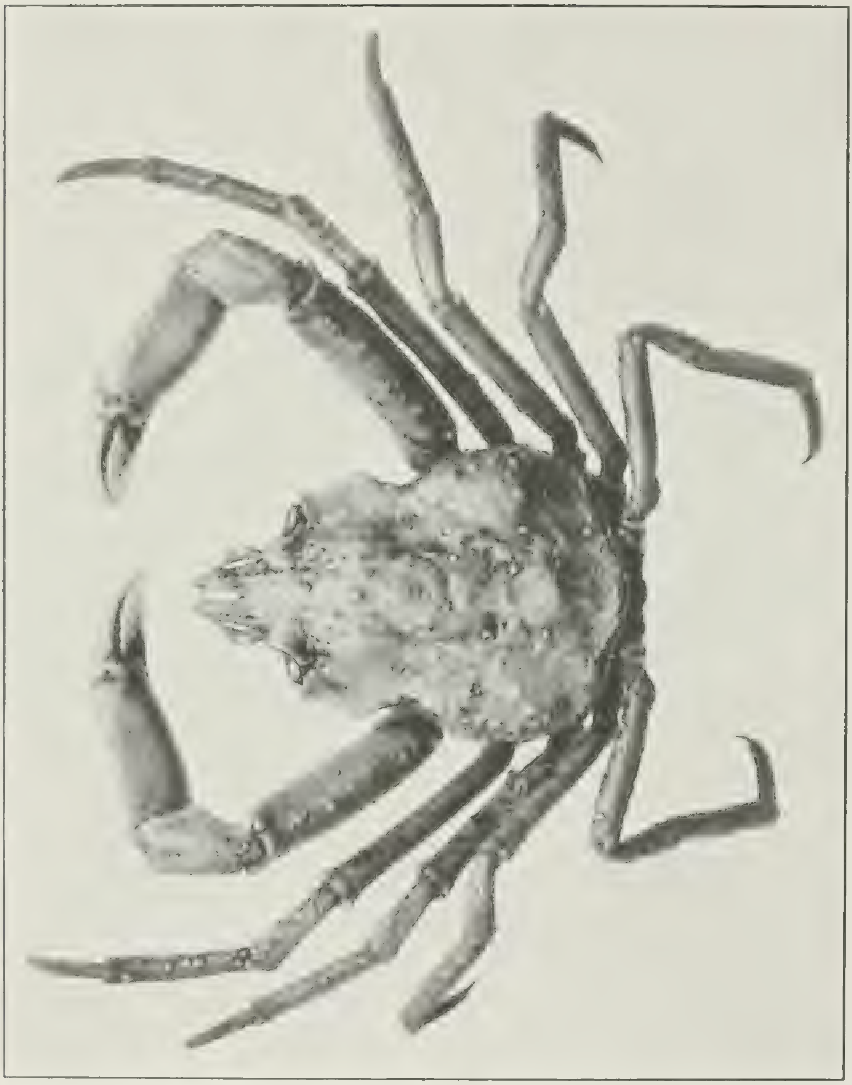
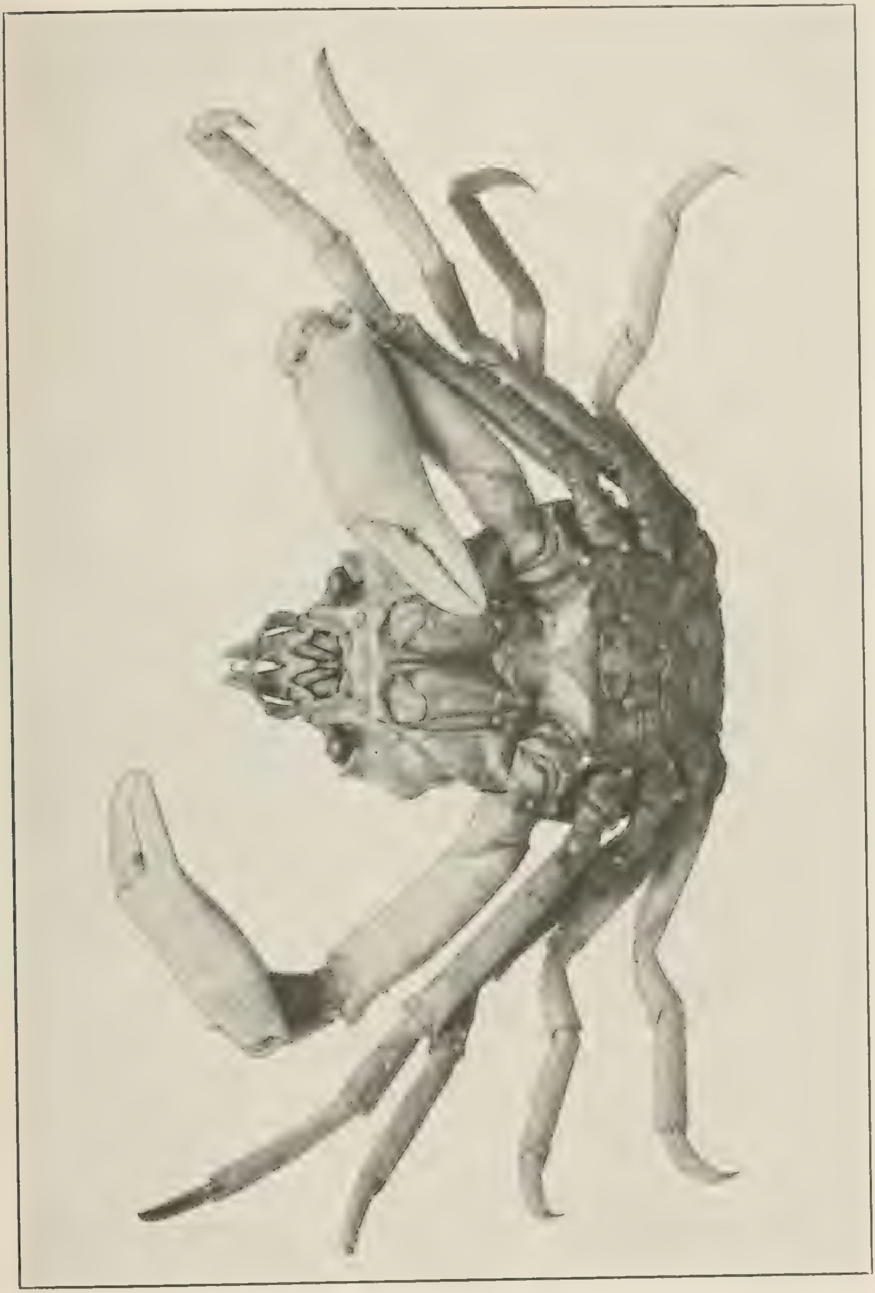


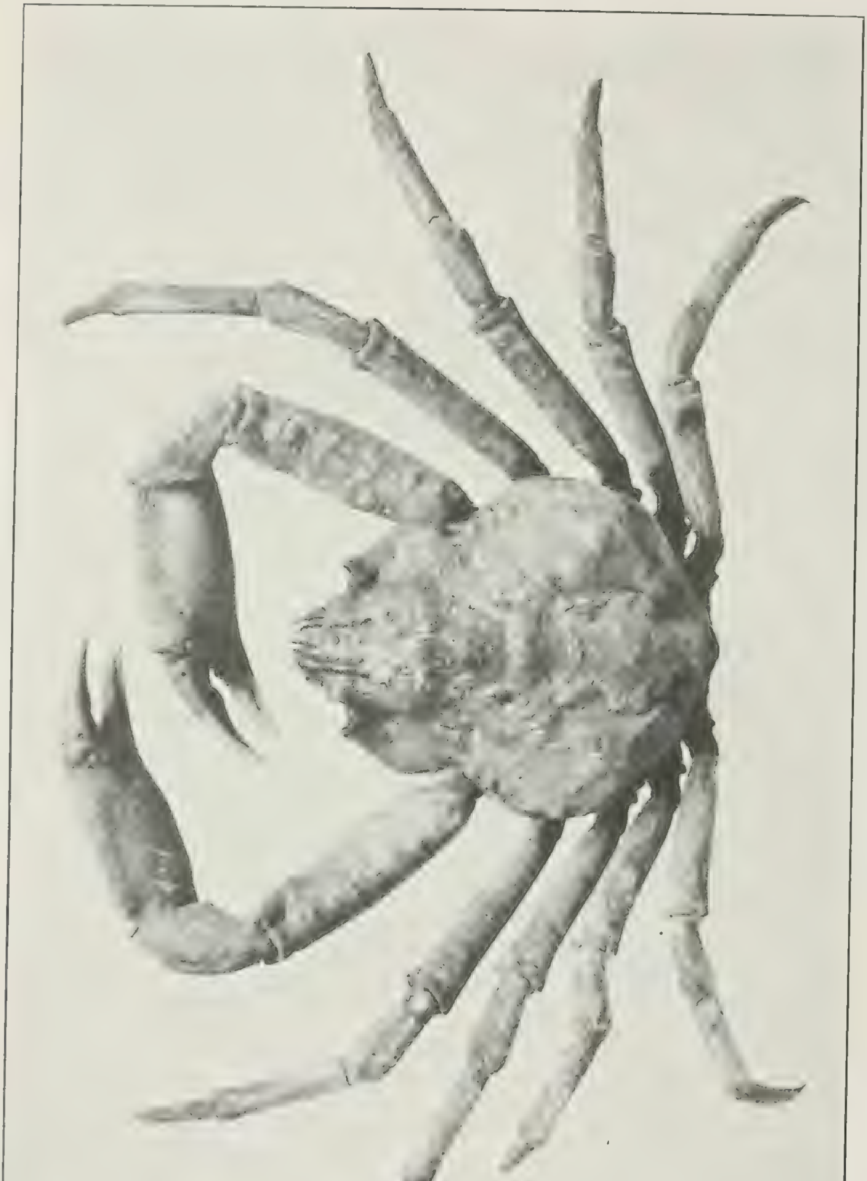
HYAS COARCTATUS. (PAGE 258)

FOR EXPLANATION OF PLATE SEE PAGE 573



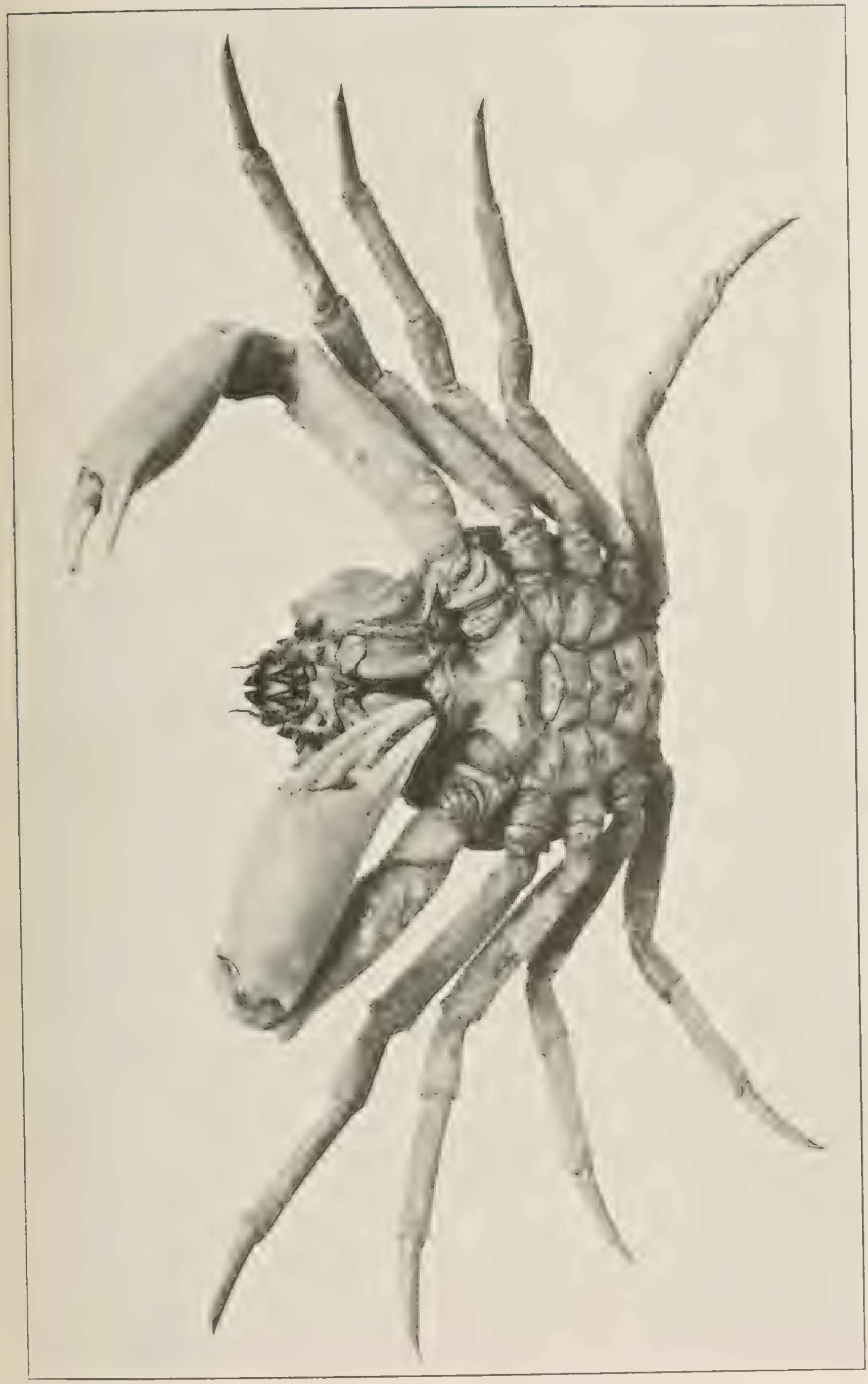
HYAS COARCTATUS. (PAGE 258)

FOR EXPLANATION OF PLATE SEE PAGE 574



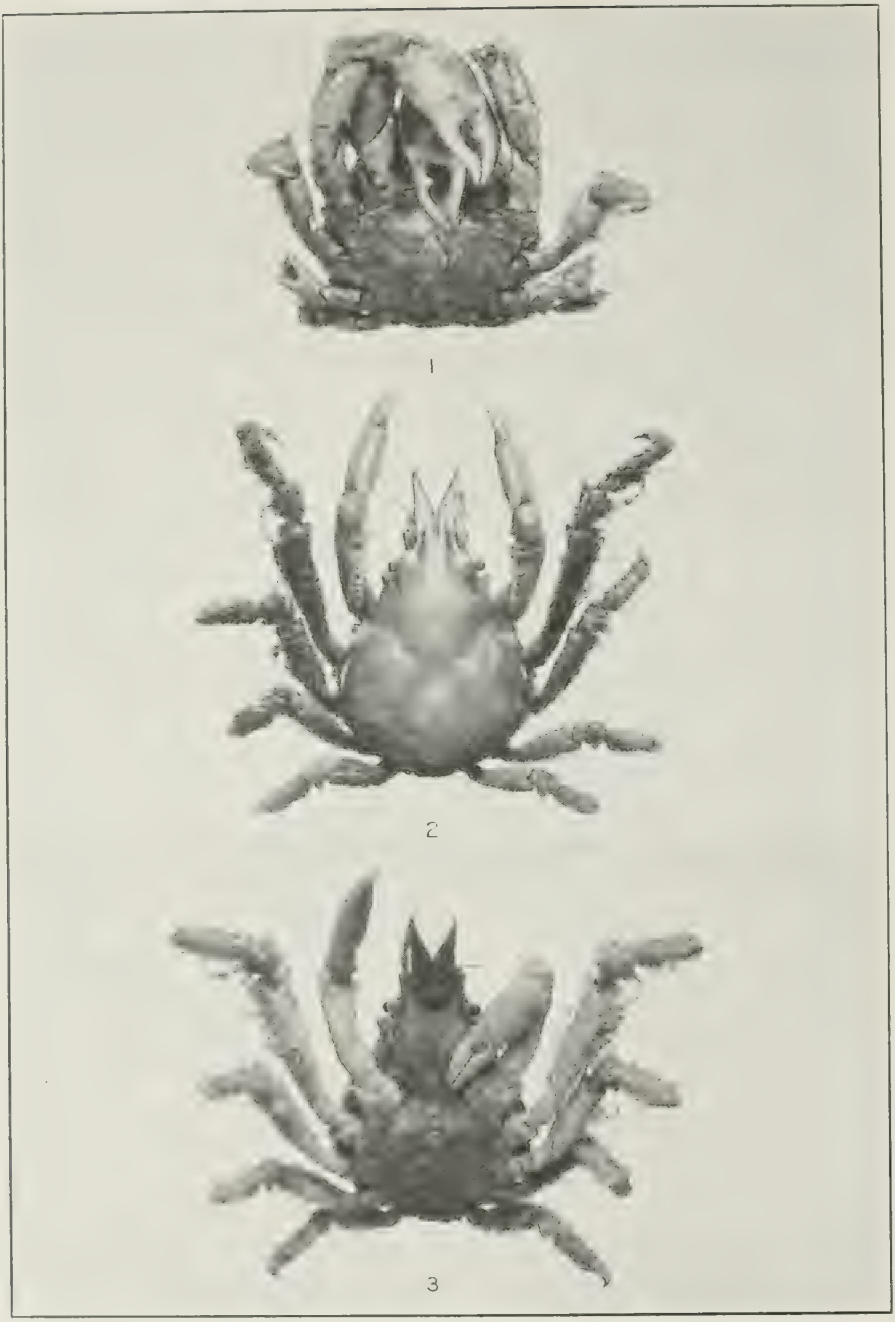
HYAS COARCTATUS ALUTACEUS. (PAGE 258)

FOR EXPLANATION OF PLATE SEE PAGE 574



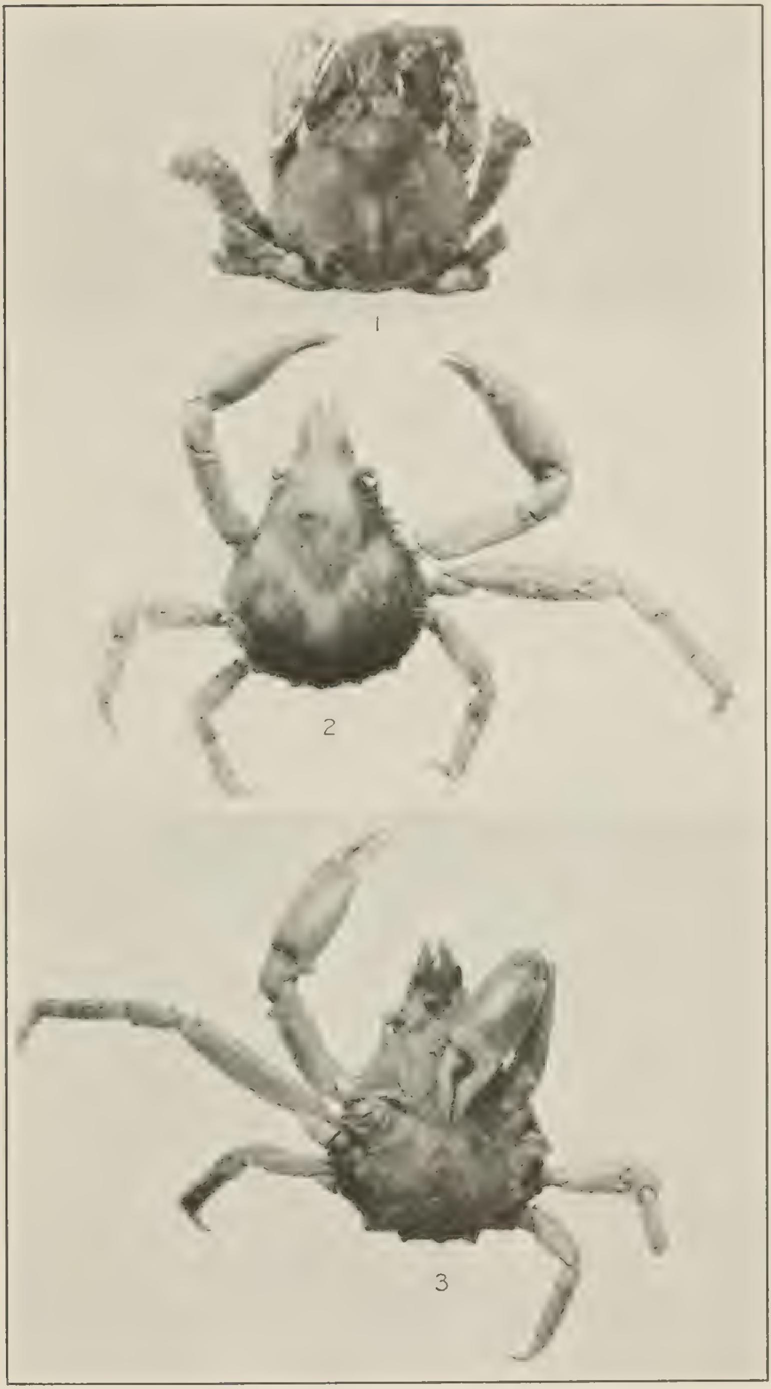
HYAS COARCTATUS ALUTACEUS. (PAGE 258)

FOR EXPLANATION OF PLATE SEE PAGE 574



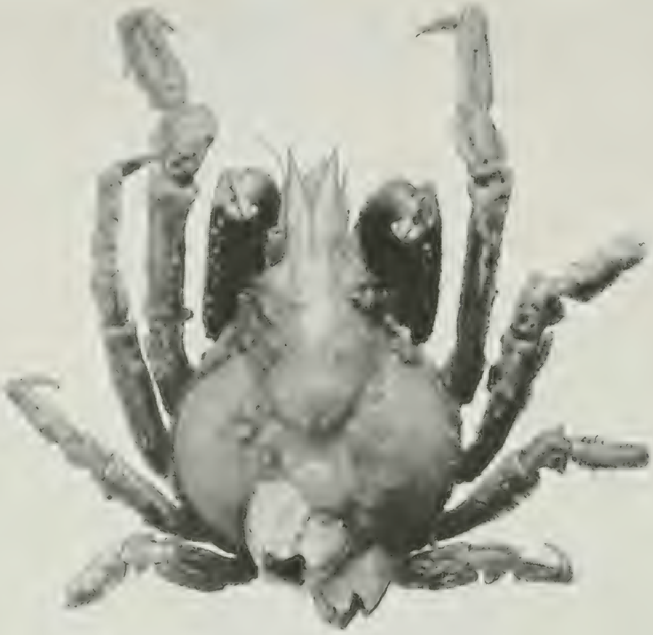
1. Pelia pacifica. (Page 283.) 2, 3. P. mutica. (Page 278)

For explanation of plate see page 574



1. Pelia pacifica. (Page 283.) 2, 3. P. tumida. (Page 281)

For explanation of plate see page 574



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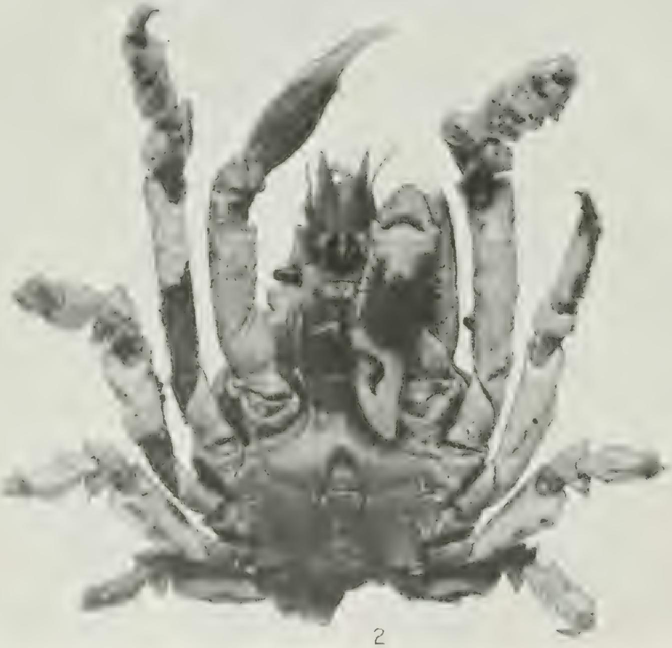
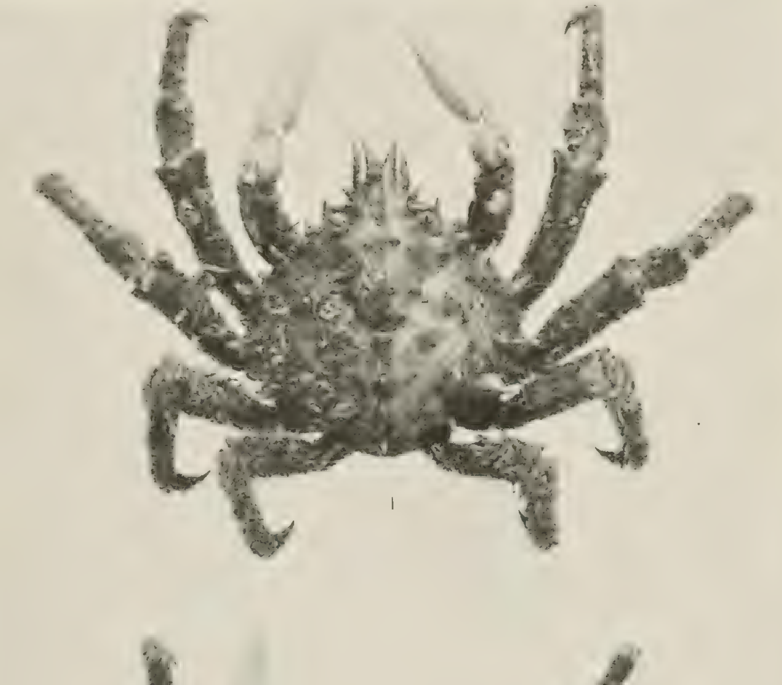


2

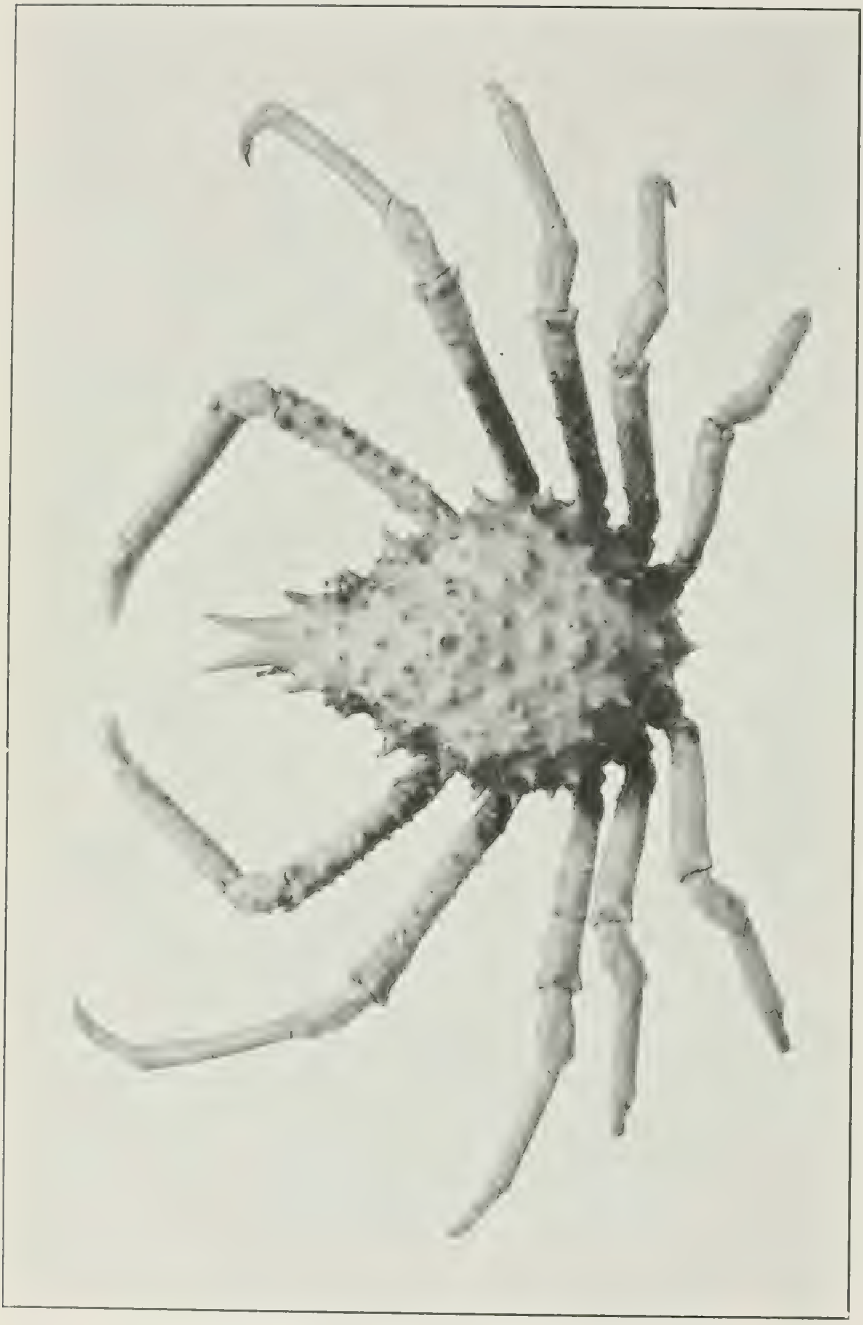
Pelia rotunda. (Page 279)

For explanation of plate see page 574



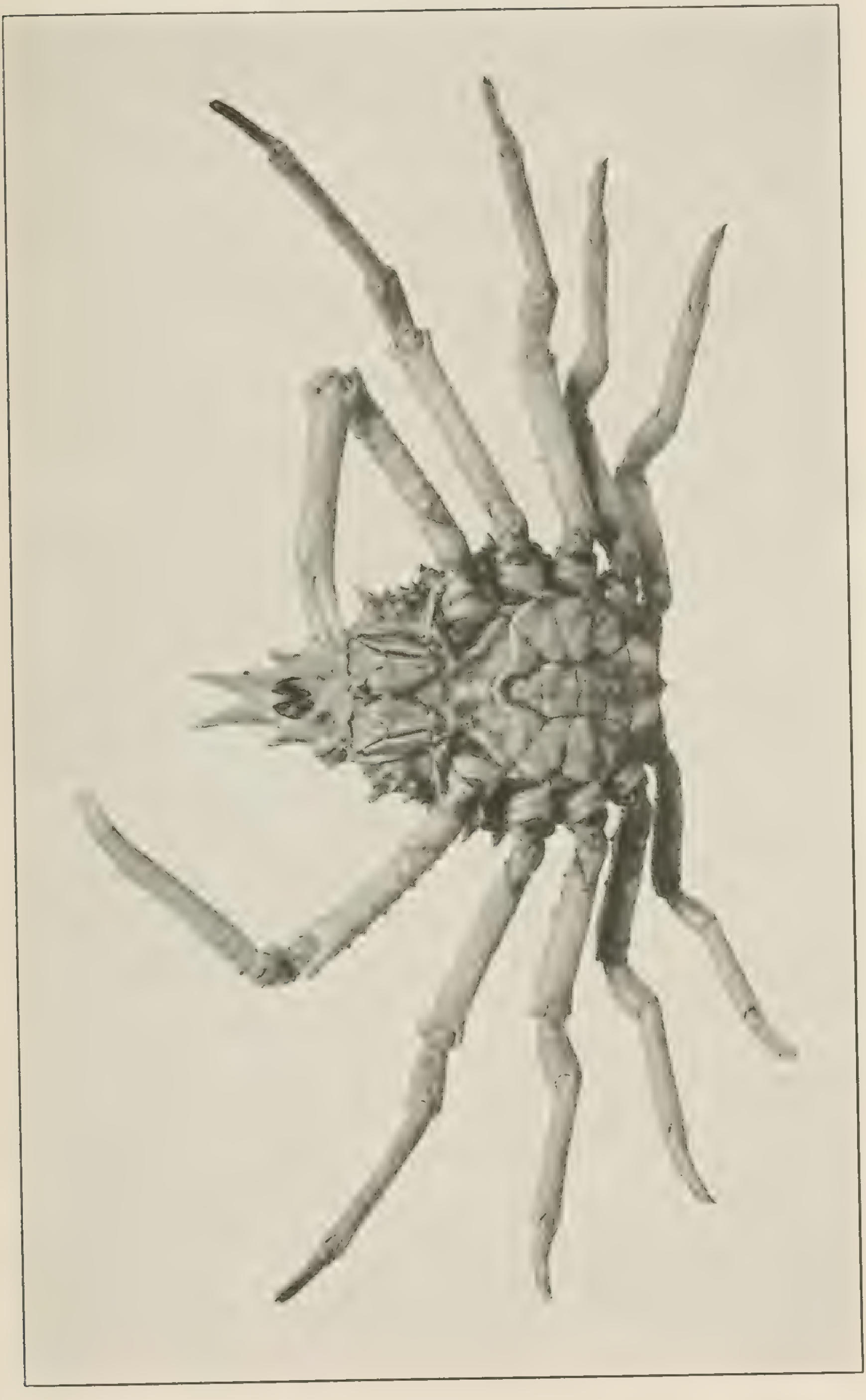
MICROPISA VIOLACEA. (PAGE 303)

FOR EXPLANATION OF PLATE SEE PAGE 574



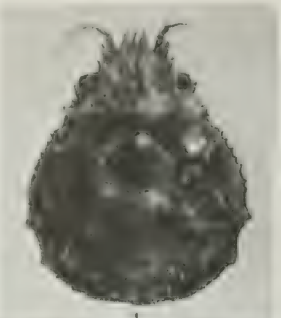
NIBILIA ANTILOCAPRA. (PAGE 290)

FOR EXPLANATION OF PLATE SEE PAGE 574



NIBILIA ANTILOCAPRA. (PAGE 290)

FOR EXPLANATION OF PLATE SEE PAGE 574



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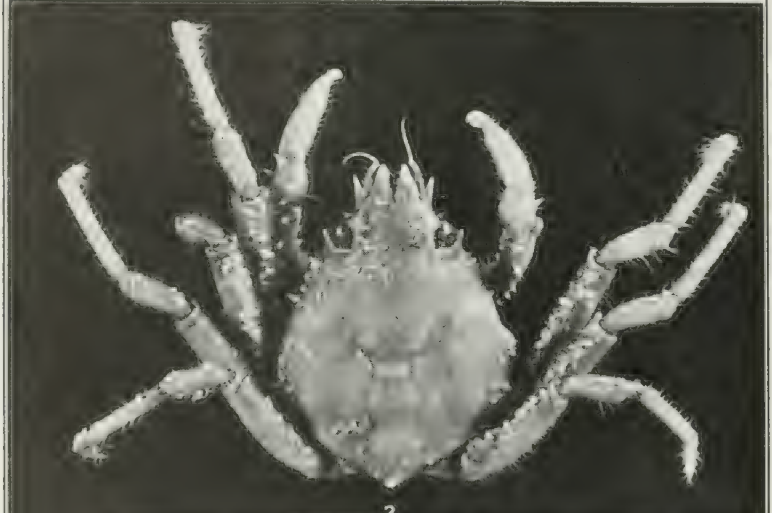

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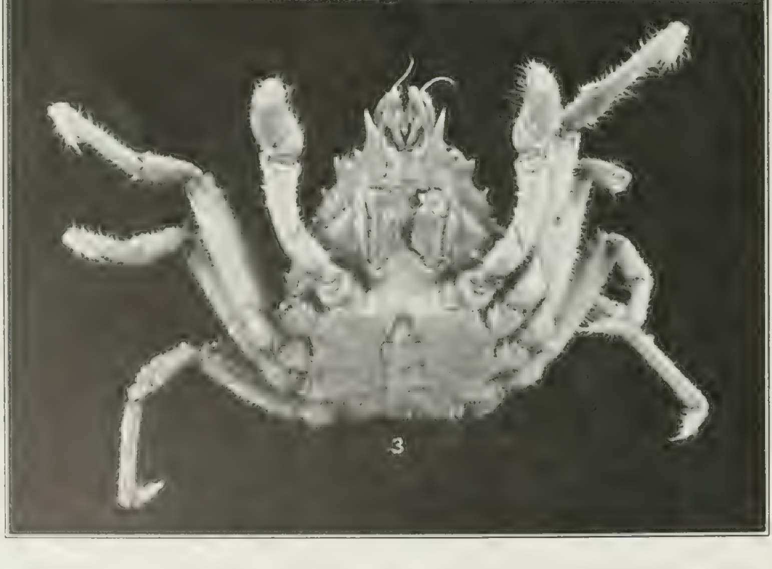

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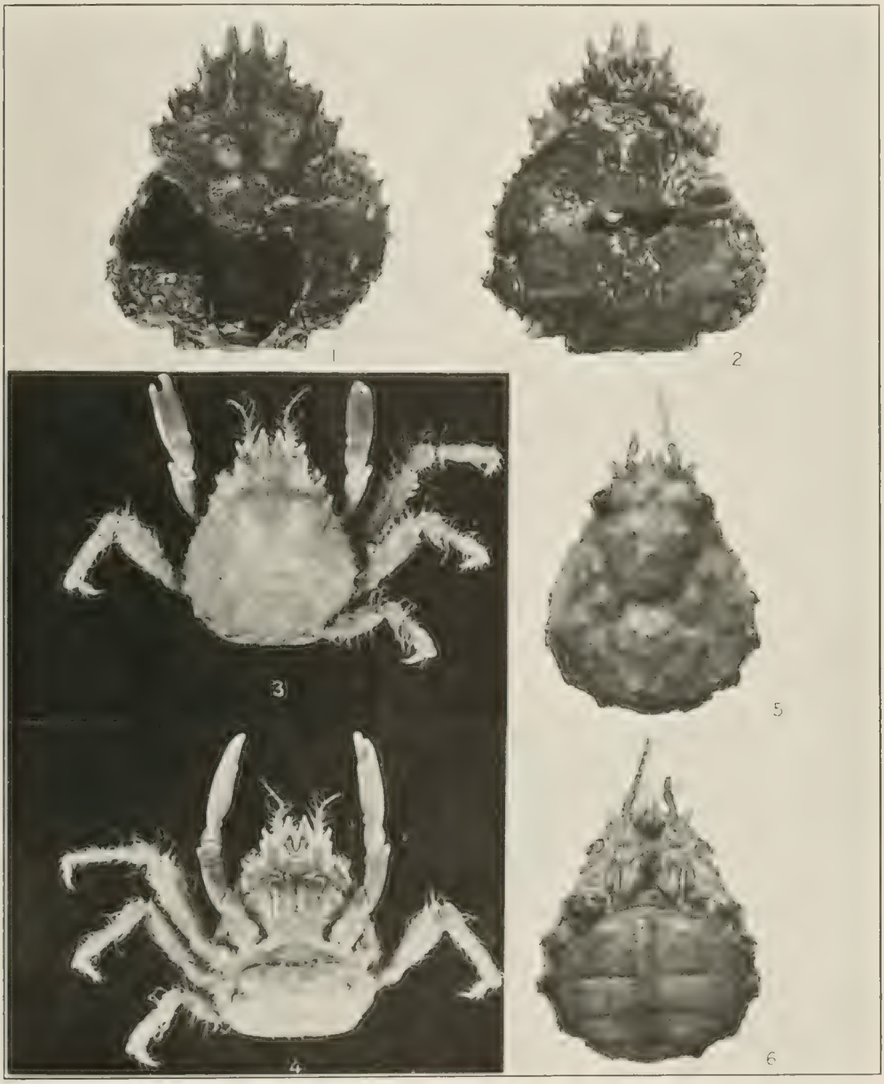
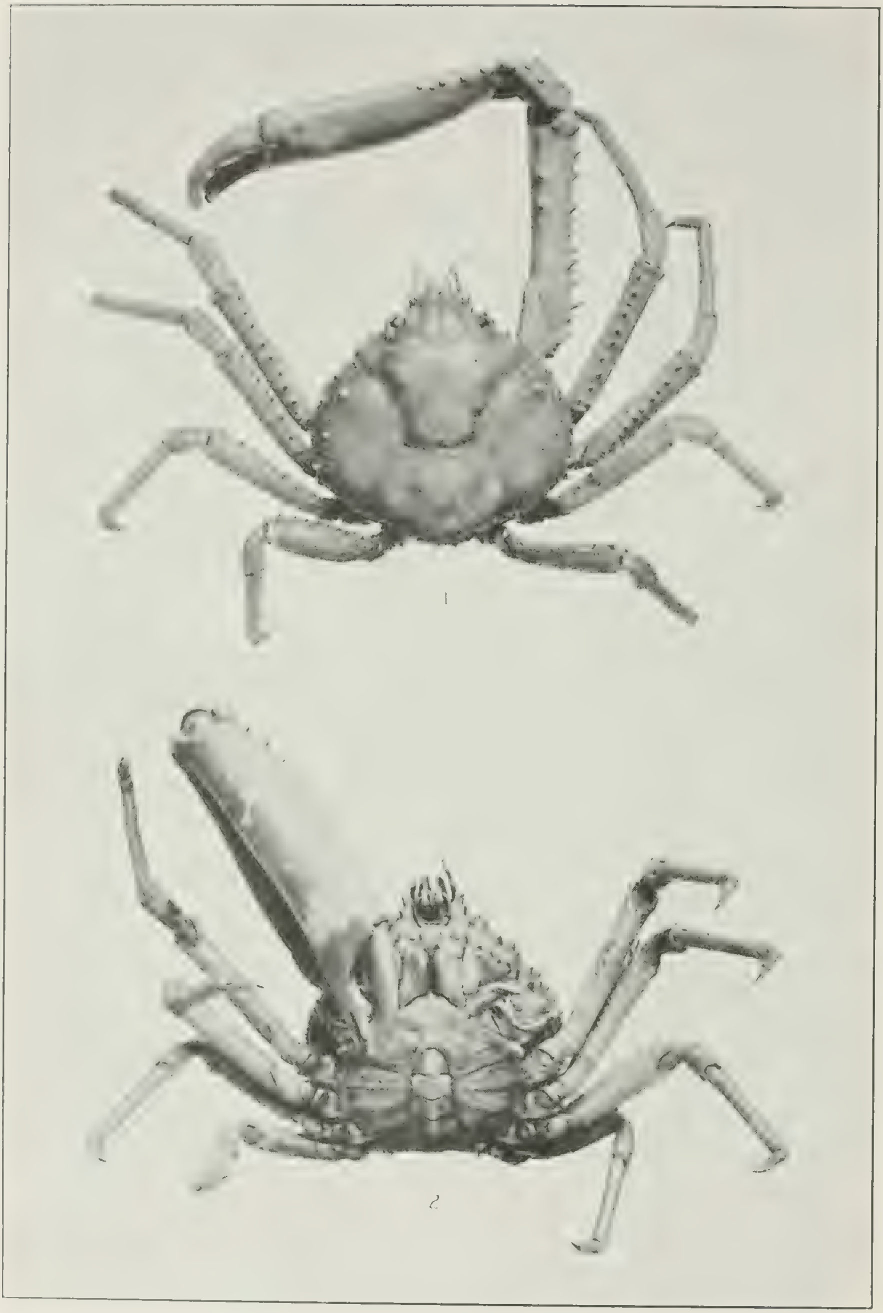
1. Herbstia depressa. (Page 298.) 2, 3. H. pyriformis. (Page 301)

For explanation of plate see page 574



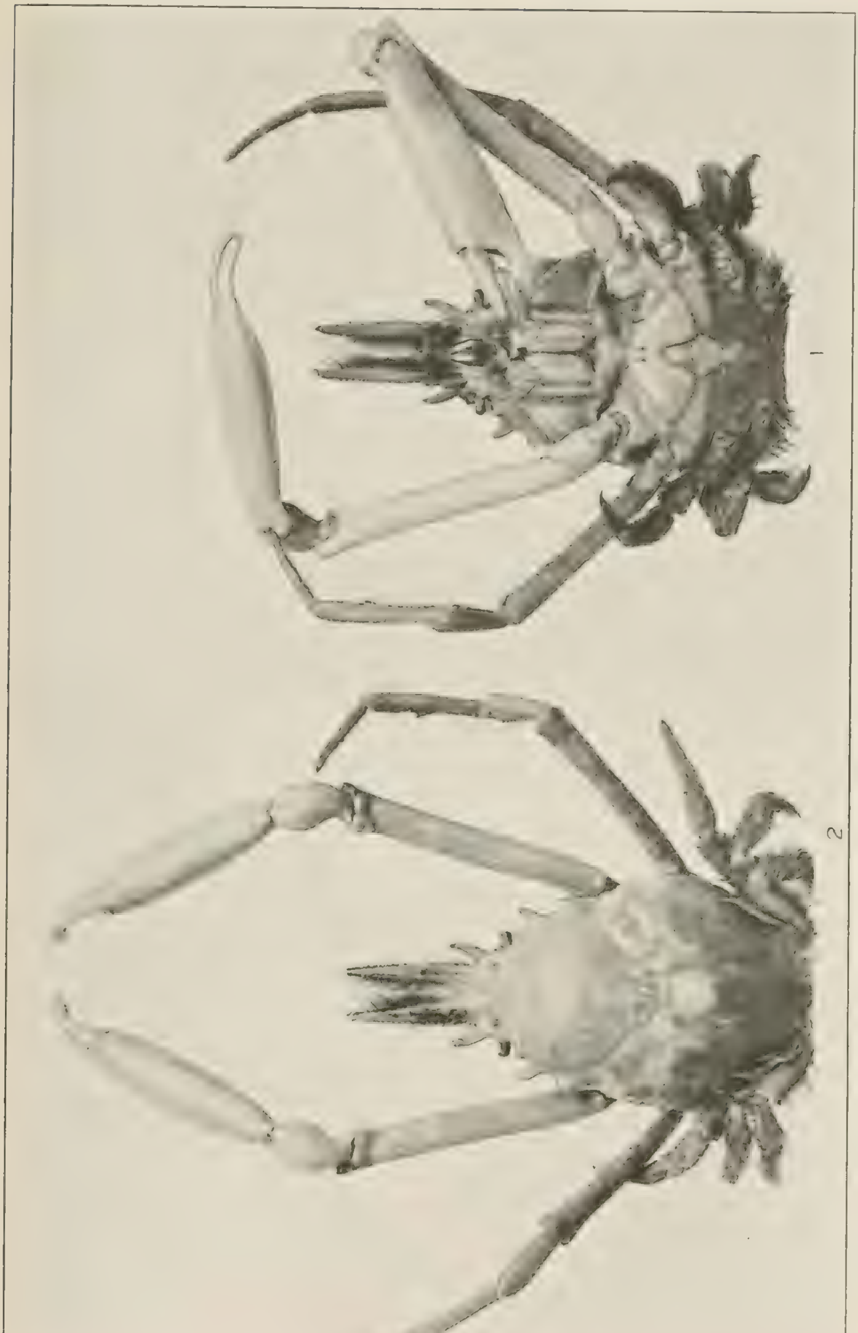
1, 2. Herbstia camptacantha. (Page 294.) 3, 4. H. edwardsii. (Page 300.) 5, 6. H. tumida. (Page 299)

For explanation of plate see pages 574 and 575



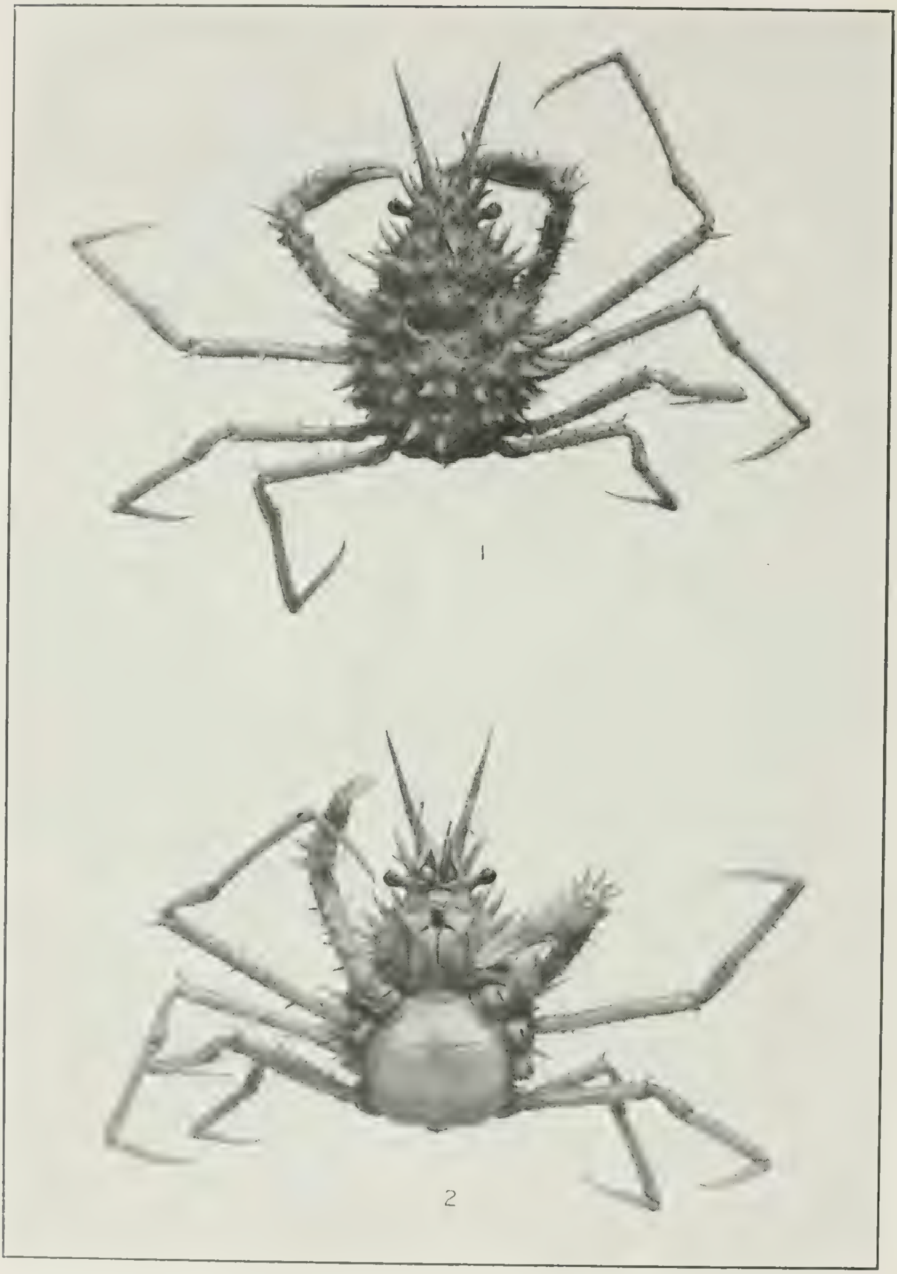
Herbstia parvifrons. (Page 296)

For explanation of plate see page 575



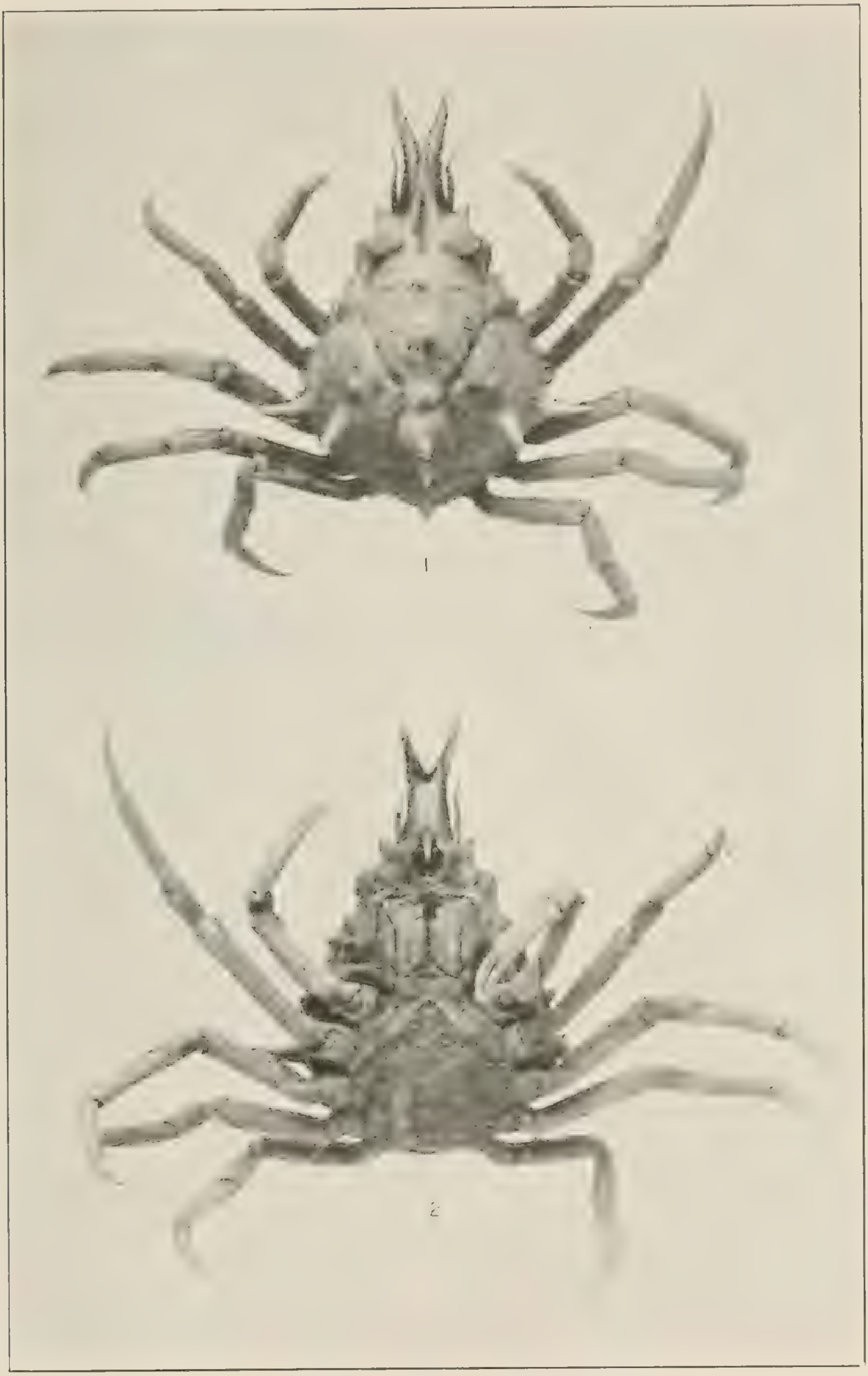
CHORINUS HEROS. (PAGE 305)

FOR EXPLANATION OF PLATE SEE PAGE 575



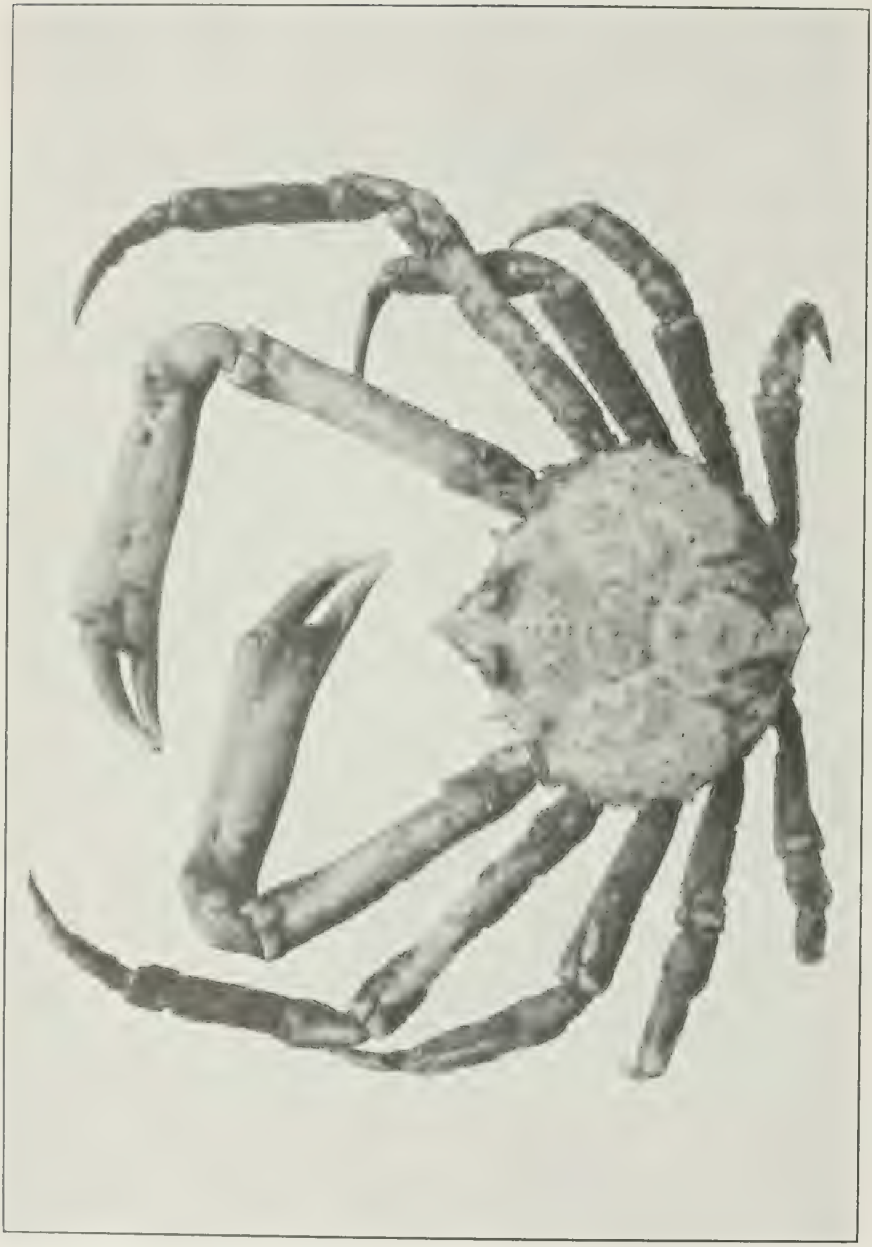
Holoplites armata. (Page 307)

For explanation of plate see page 575



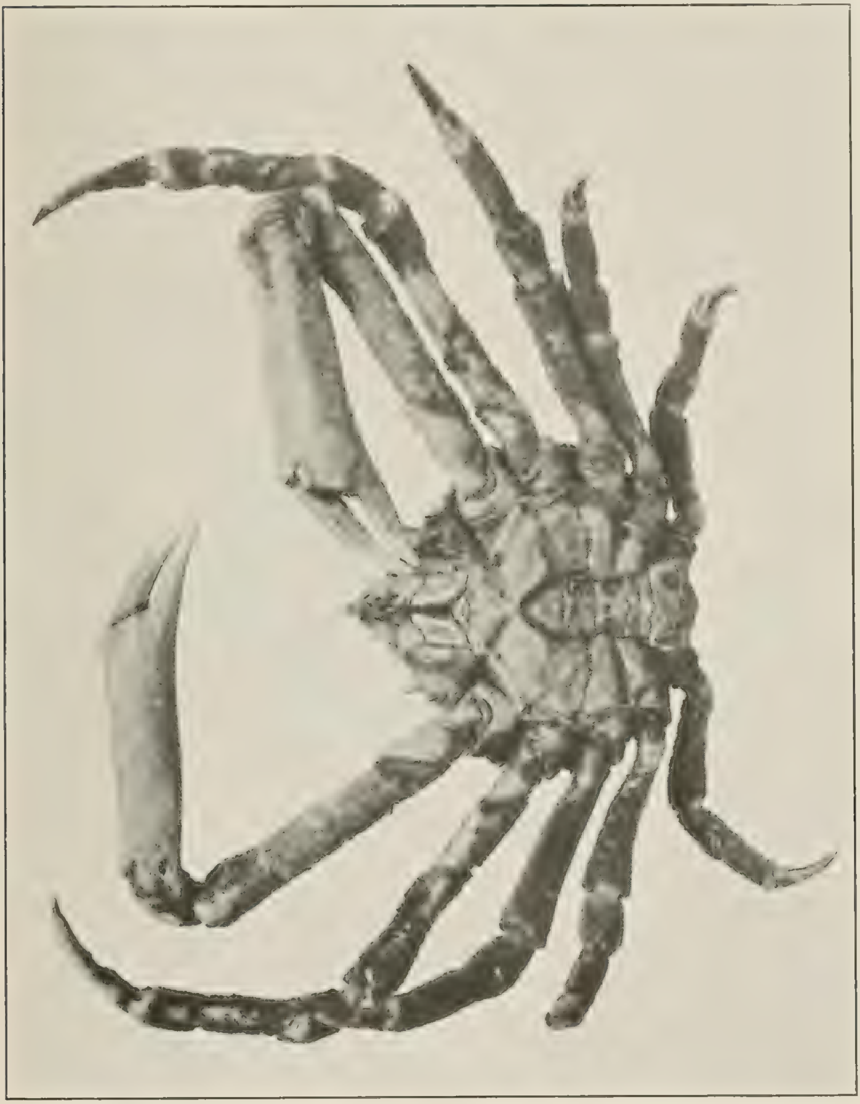
LIBINIA ERINACEA. (PAGE 321)

FOR EXPLANATION OF PLATE SEE PAGE 575



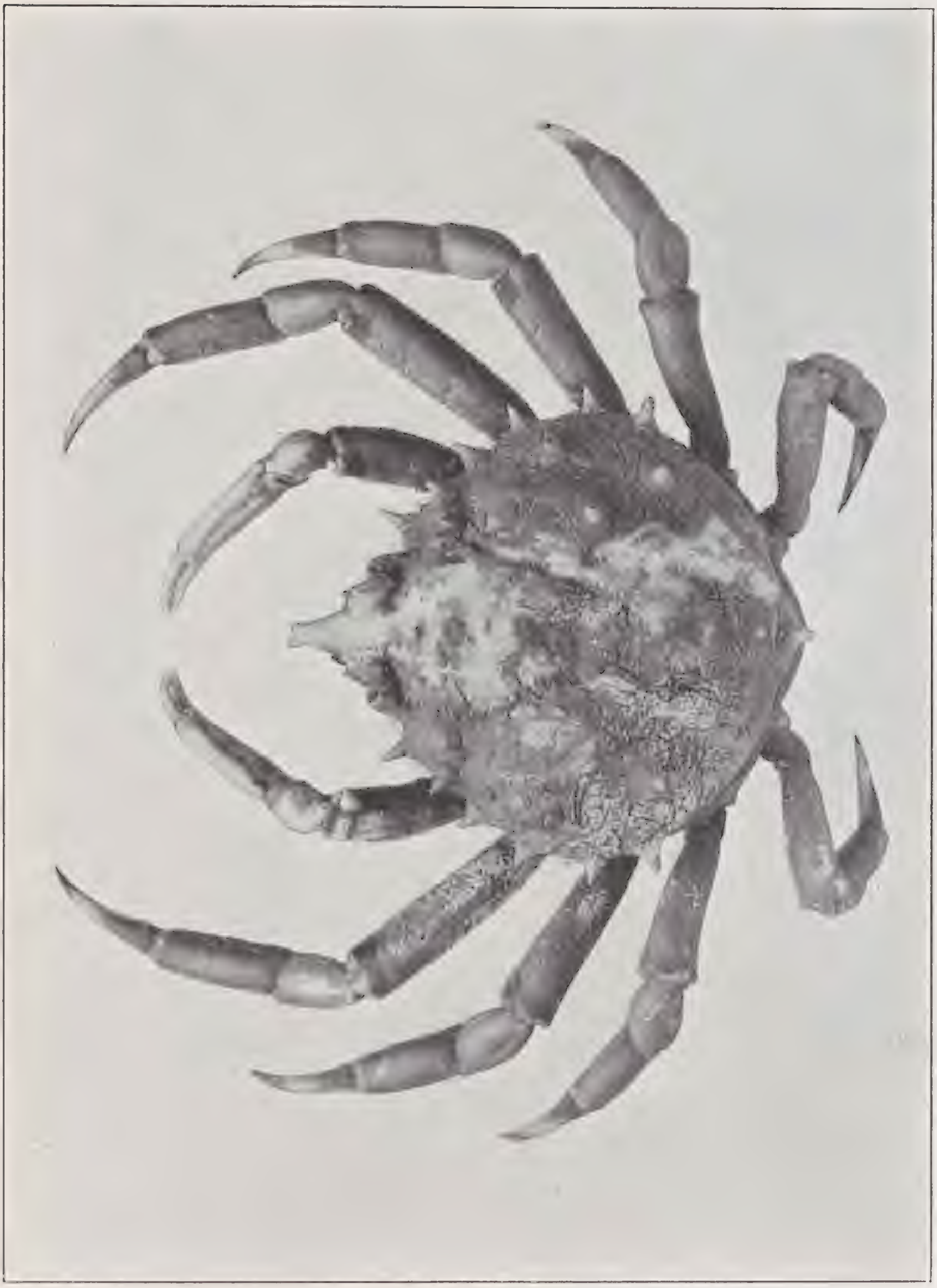
LIBINIA EMARGINATA. (PAGE 311)

FOR EXPLANATION OF PLATE SEE PAGE 575



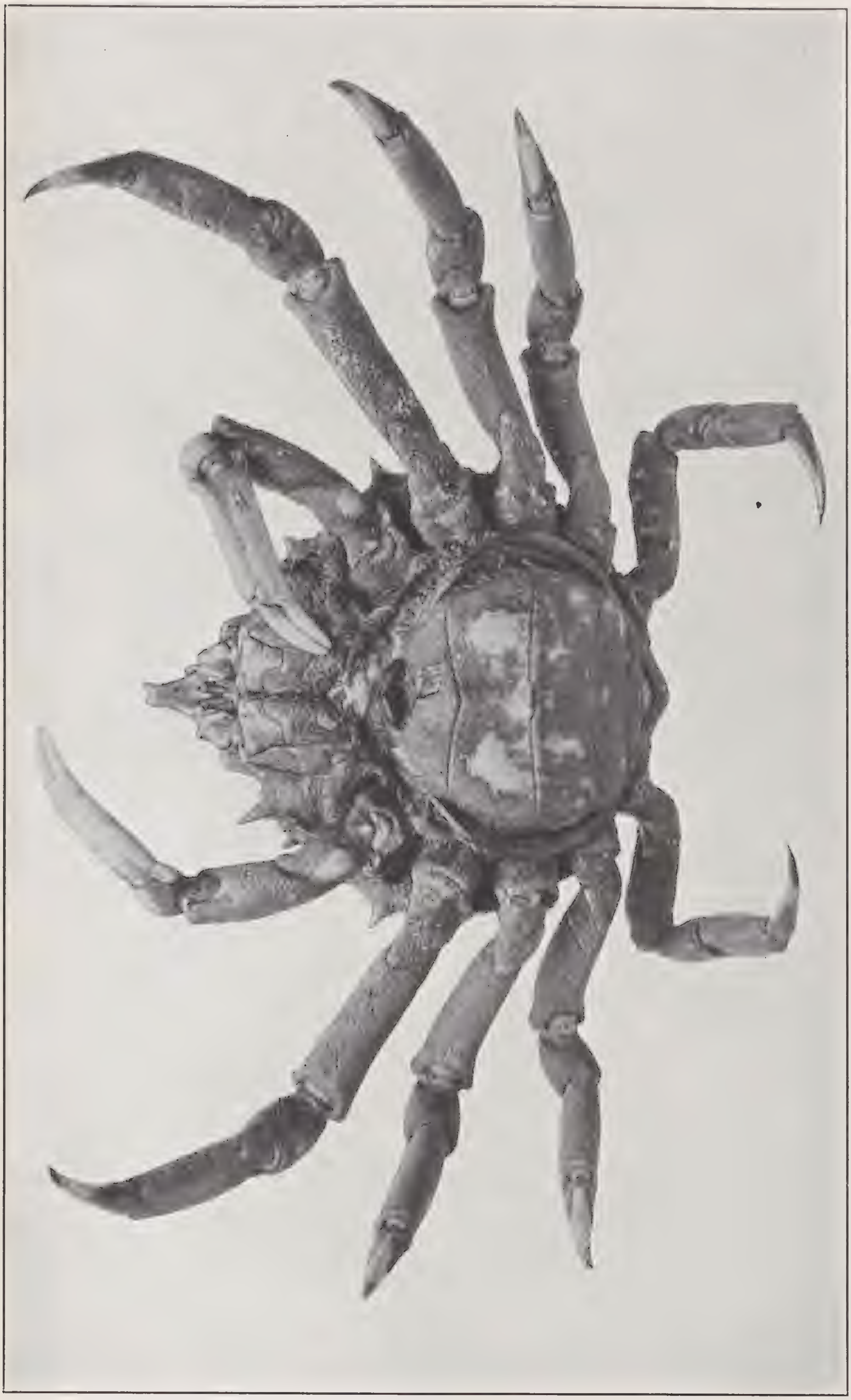
LIBINIA EMARGINATA. (PAGE 311)

FOR EXPLANATION OF PLATE SEE PAGE 575



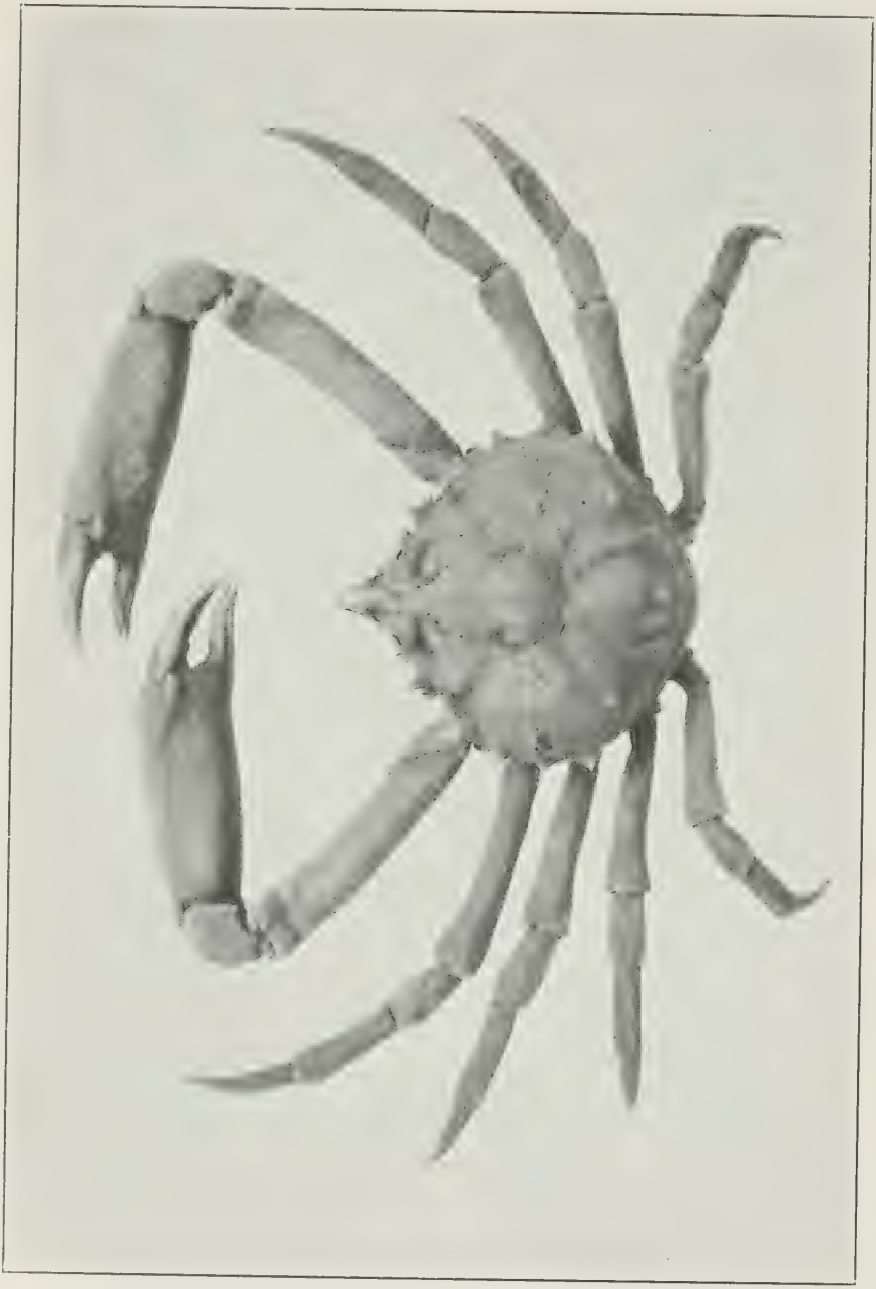
LIBINIA EMARGINATA, VARIETY. (PAGE 312)

FOR EXPLANATION OF PLATE SEE PAGE 575



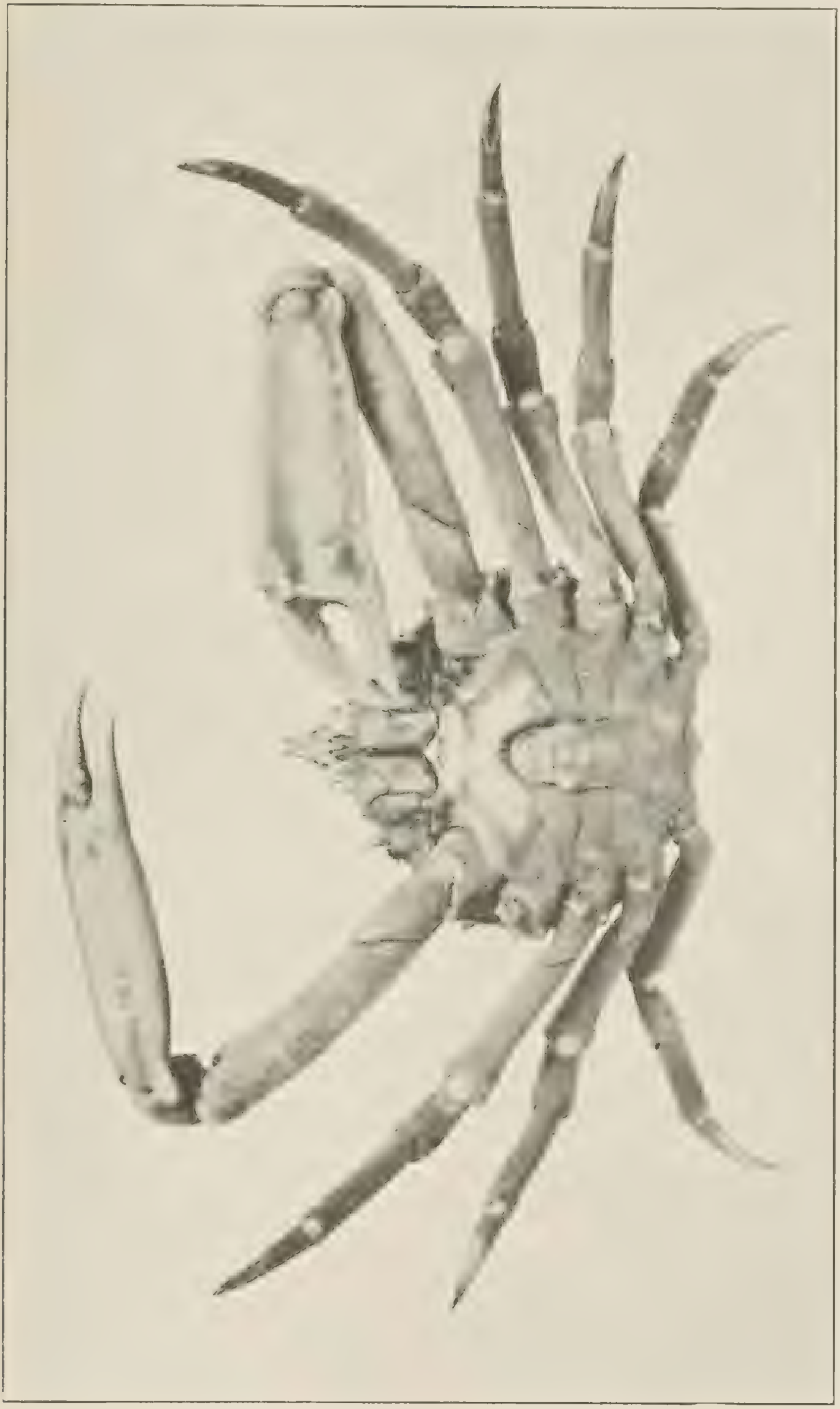
LIBINIA EMARGINATA, VARIETY. (PAGE 312)

FOR EXPLANATION OF PLATE SEE PAGE 575



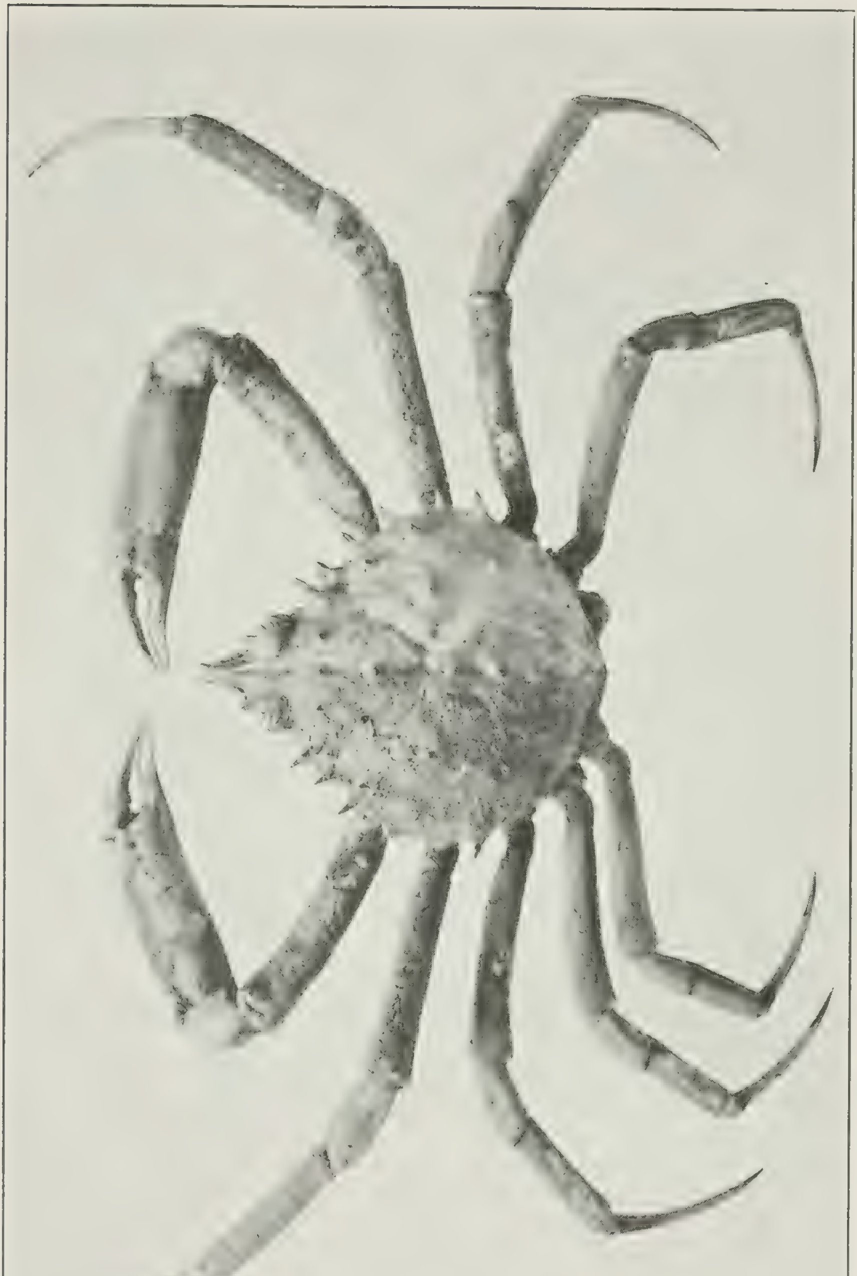
Libinia dubia. (Page 313)

For explanation of plate see page 575



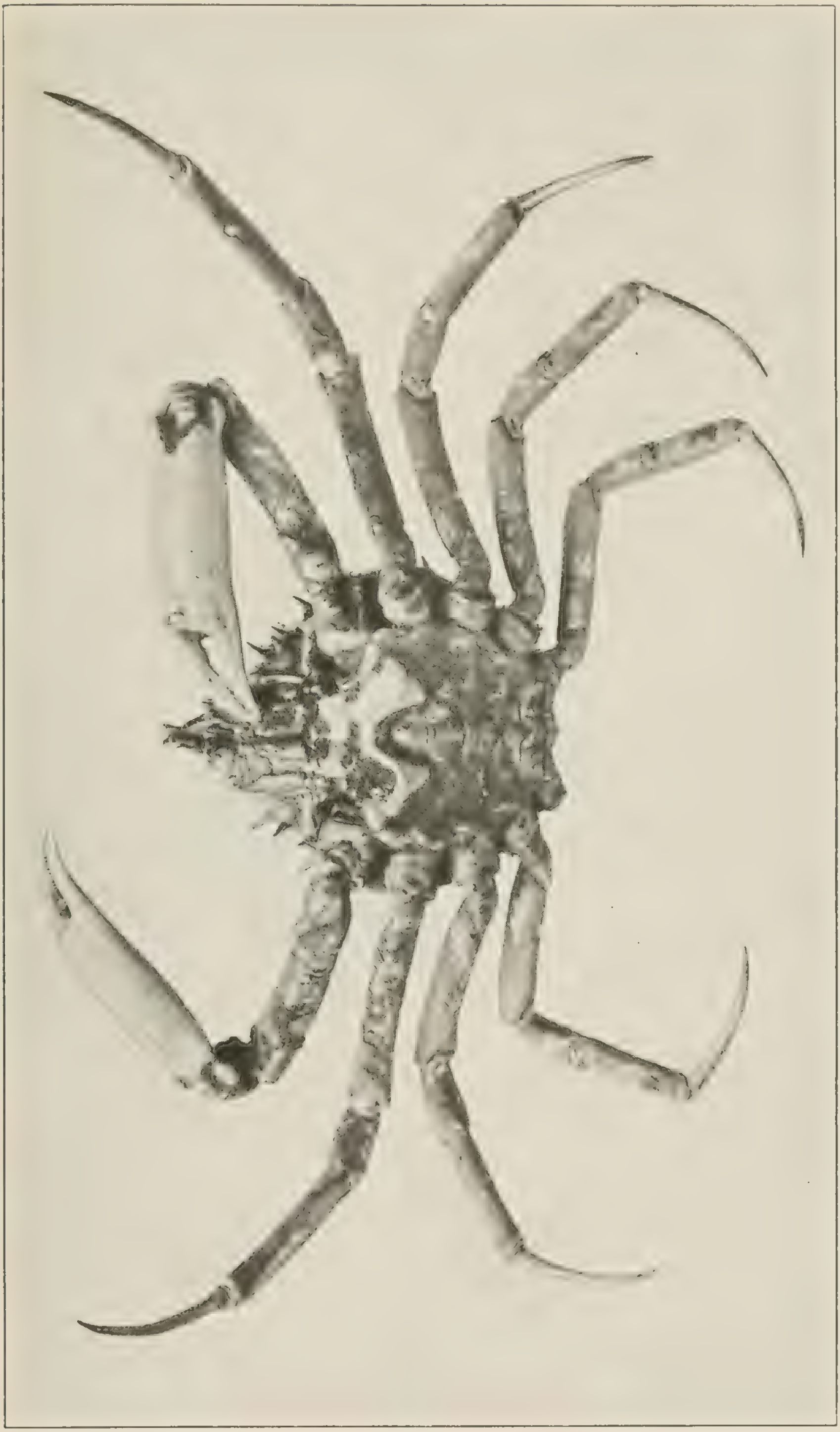
LIBINIA DUBIA. (PAGE 313)

FOR EXPLANATION OF PLATE SEE PAGE 575



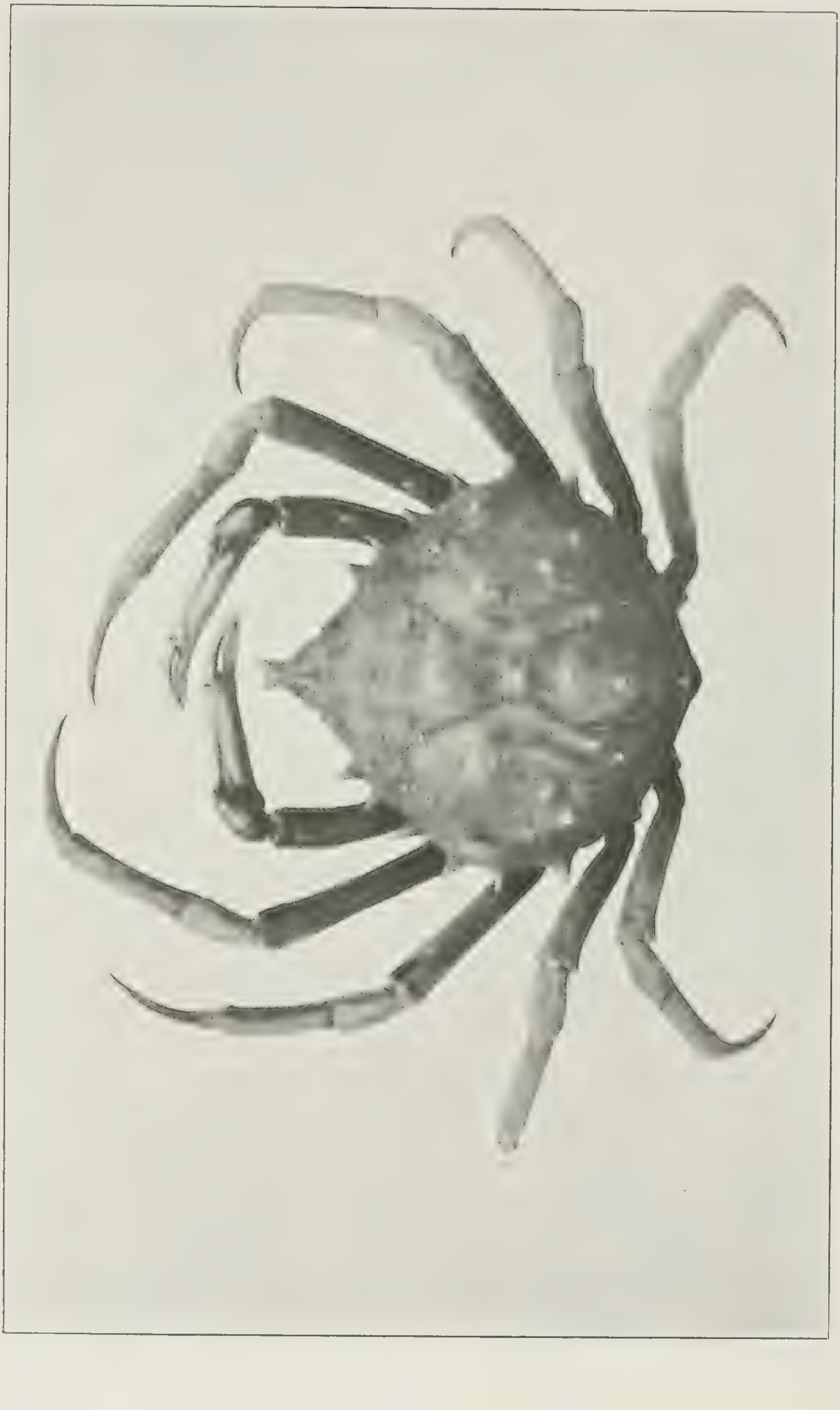
Libinia rhomboidea. (Page 323)

For explanation of plate see page 575



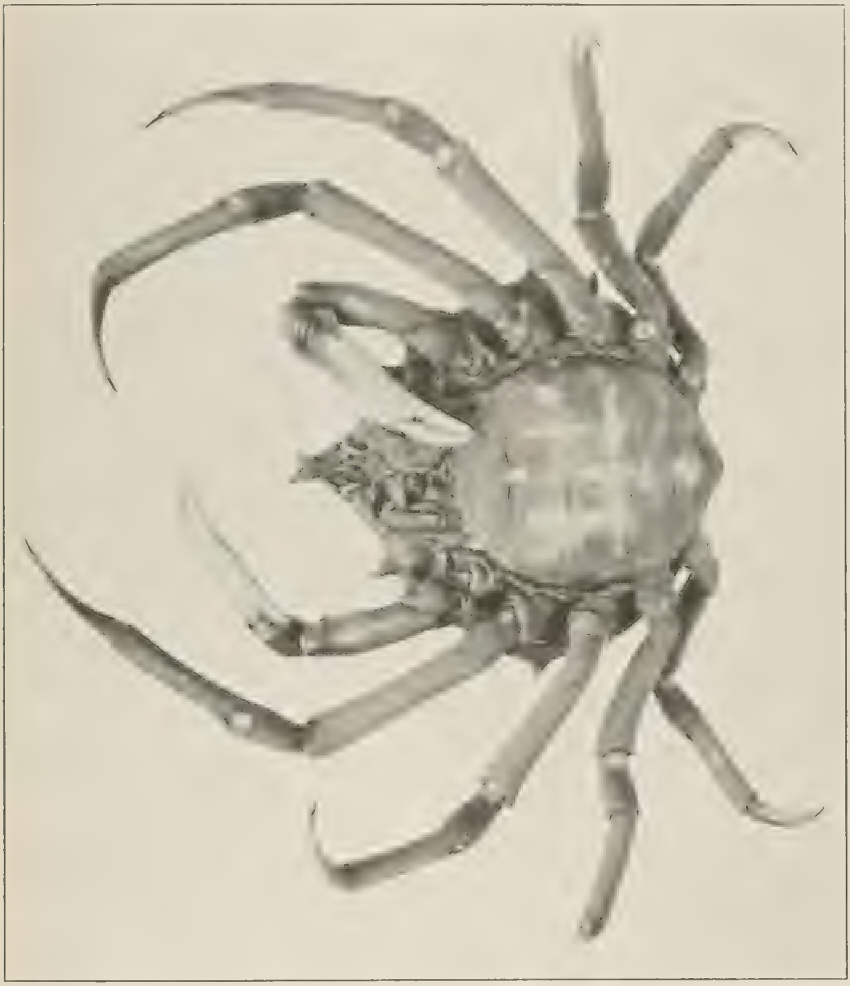
Libinia rhomboidea. (Page 323)

For explanation of plate see page 575



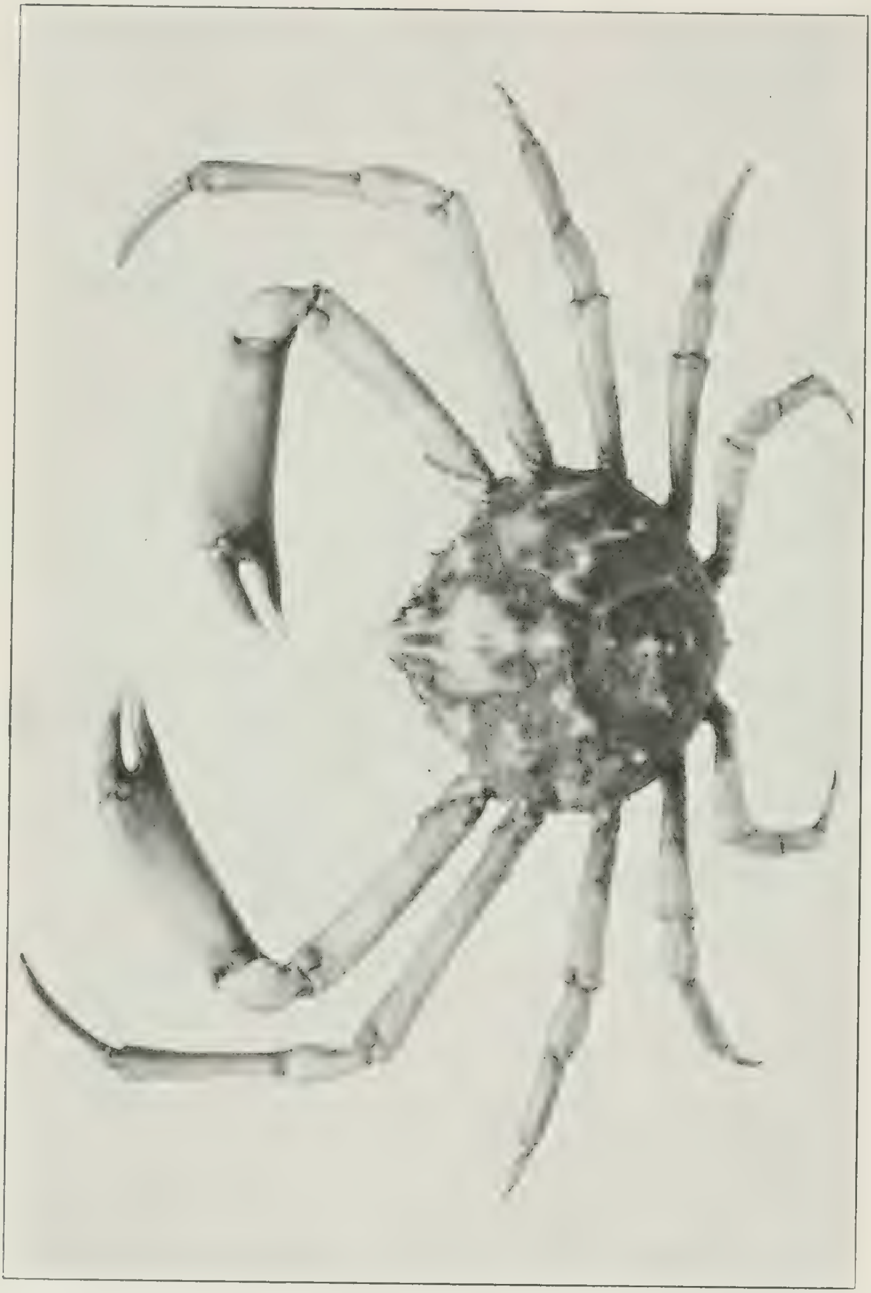
LIBINIA FERREIRAE. (PAGE 324)

FOR EXPLANATION OF PLATE SEE PAGE 575



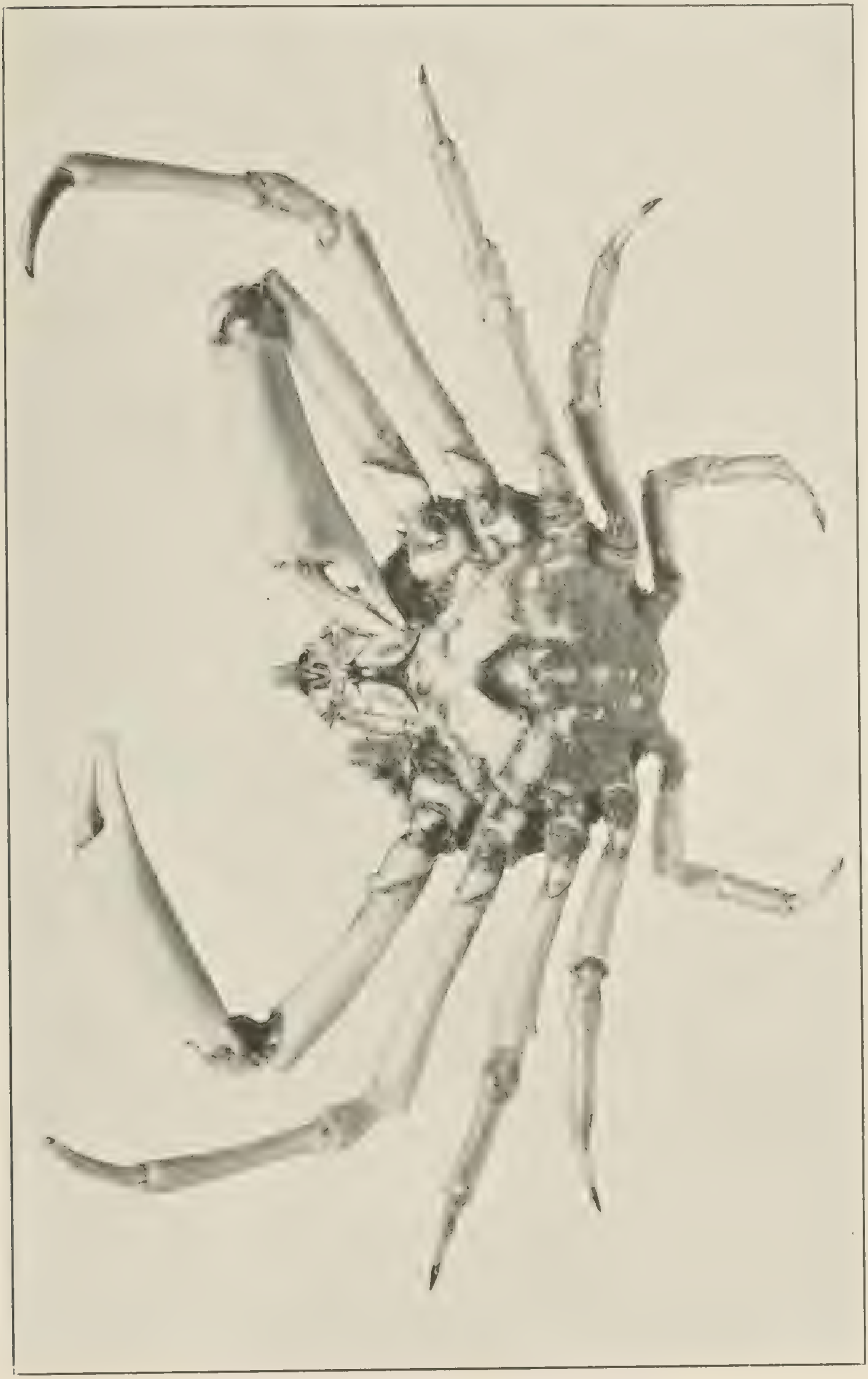
LIBINIA FERREIRAE. PAGE 324

FOR EXPLANATION OF PLATE SEE PAGE 576



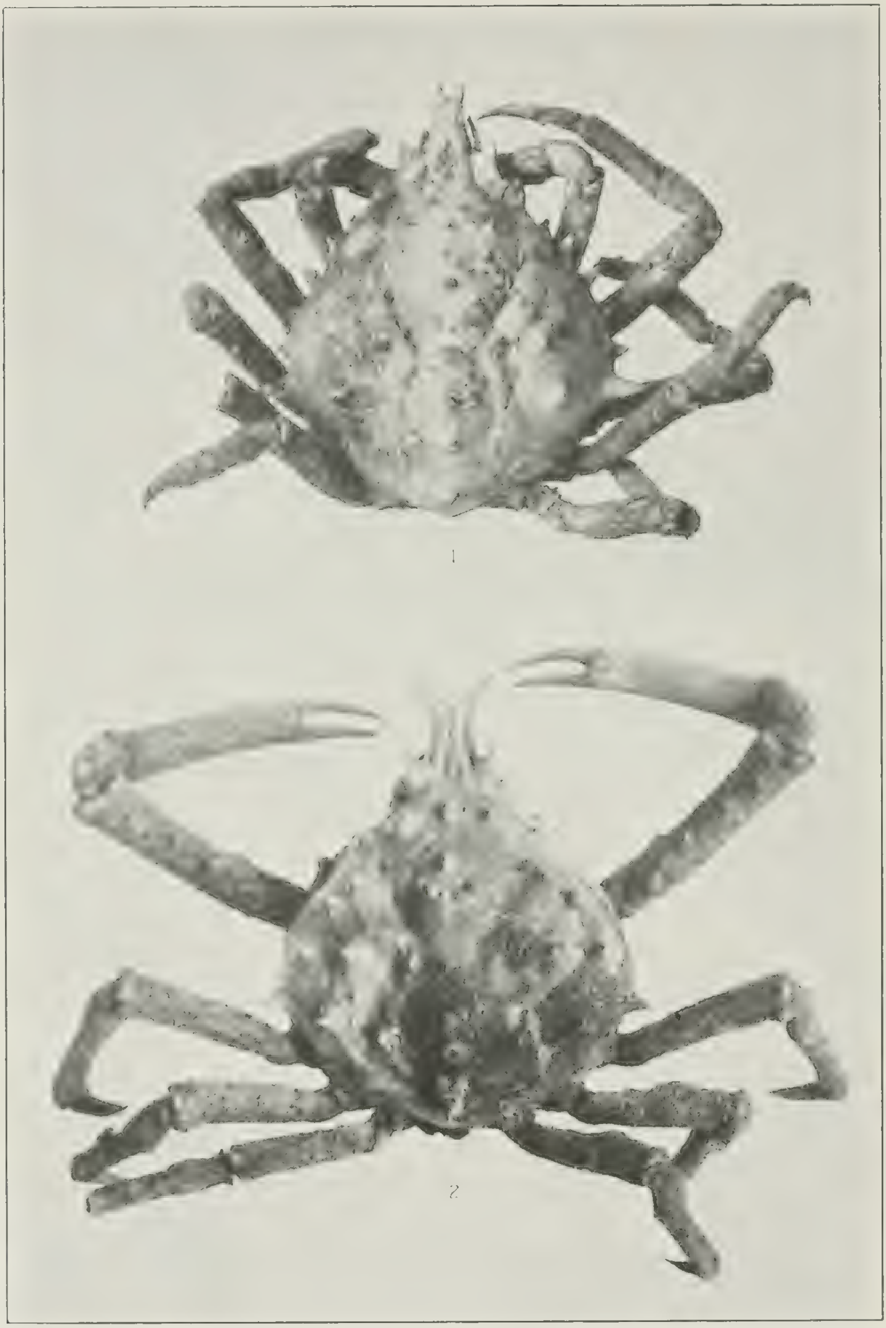
LIBINIA SPINOSA. (PAGE 325)

FOR EXPLANATION OF PLATE SEE PAGE 576



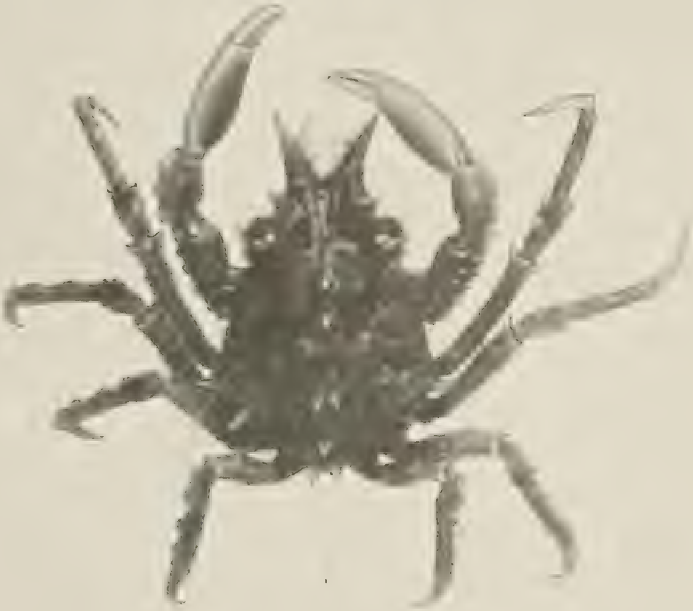
LIBINIA SPINOSA. (PAGE 325)

FOR EXPLANATION OF PLATE SEE PAGE 576



1. Libinia dubia. (Page 313.) 2. L. rostrata. (Page 329)

For explanation of plate see page 576



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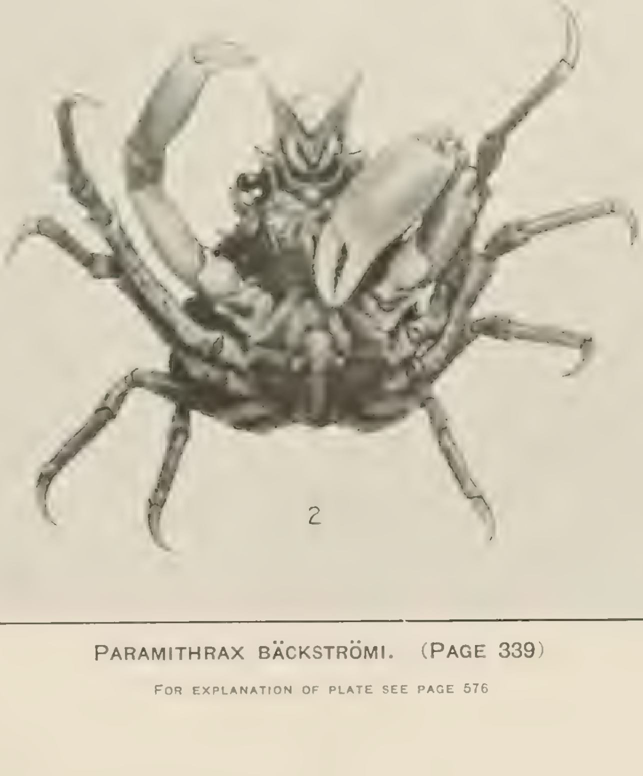

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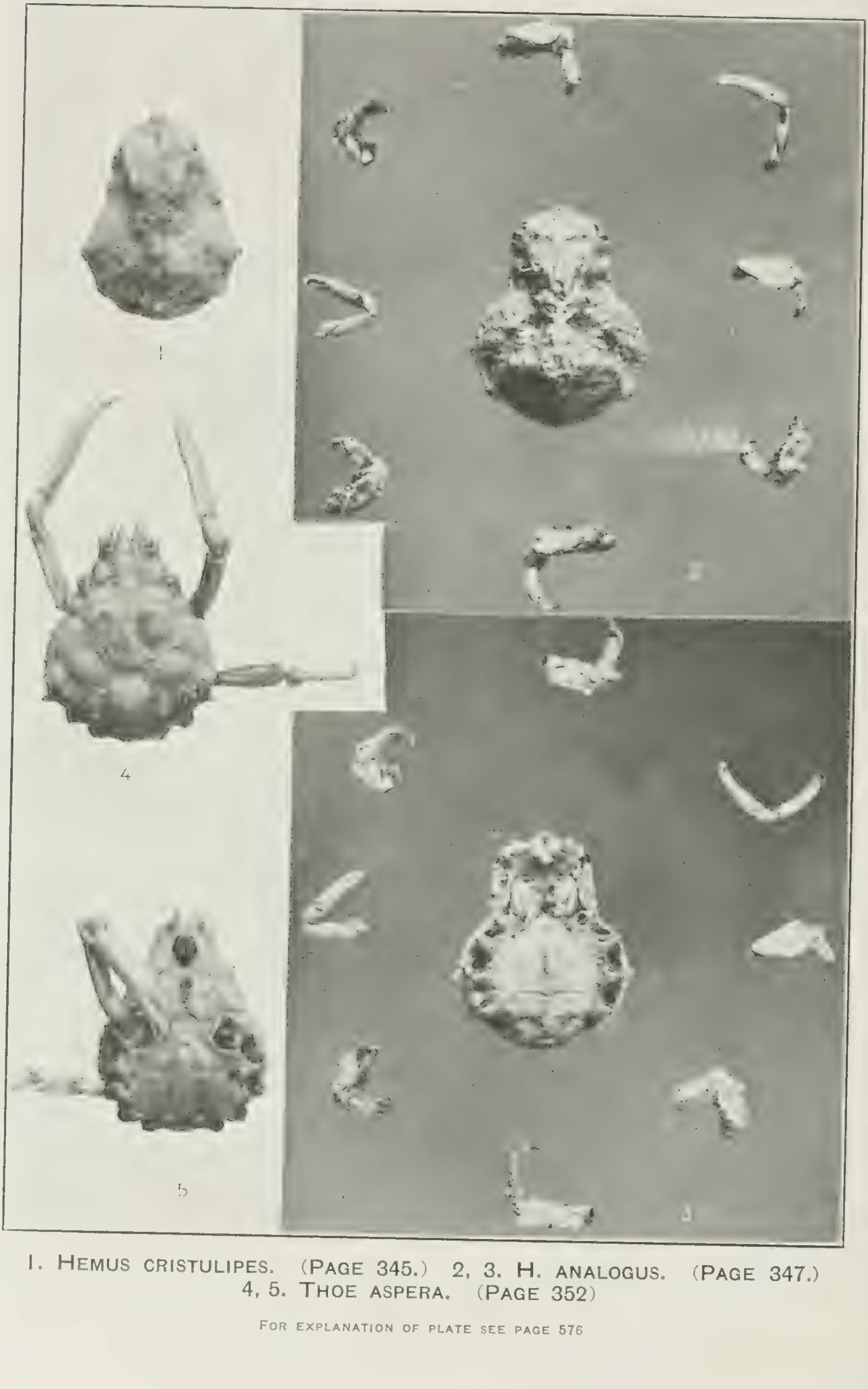
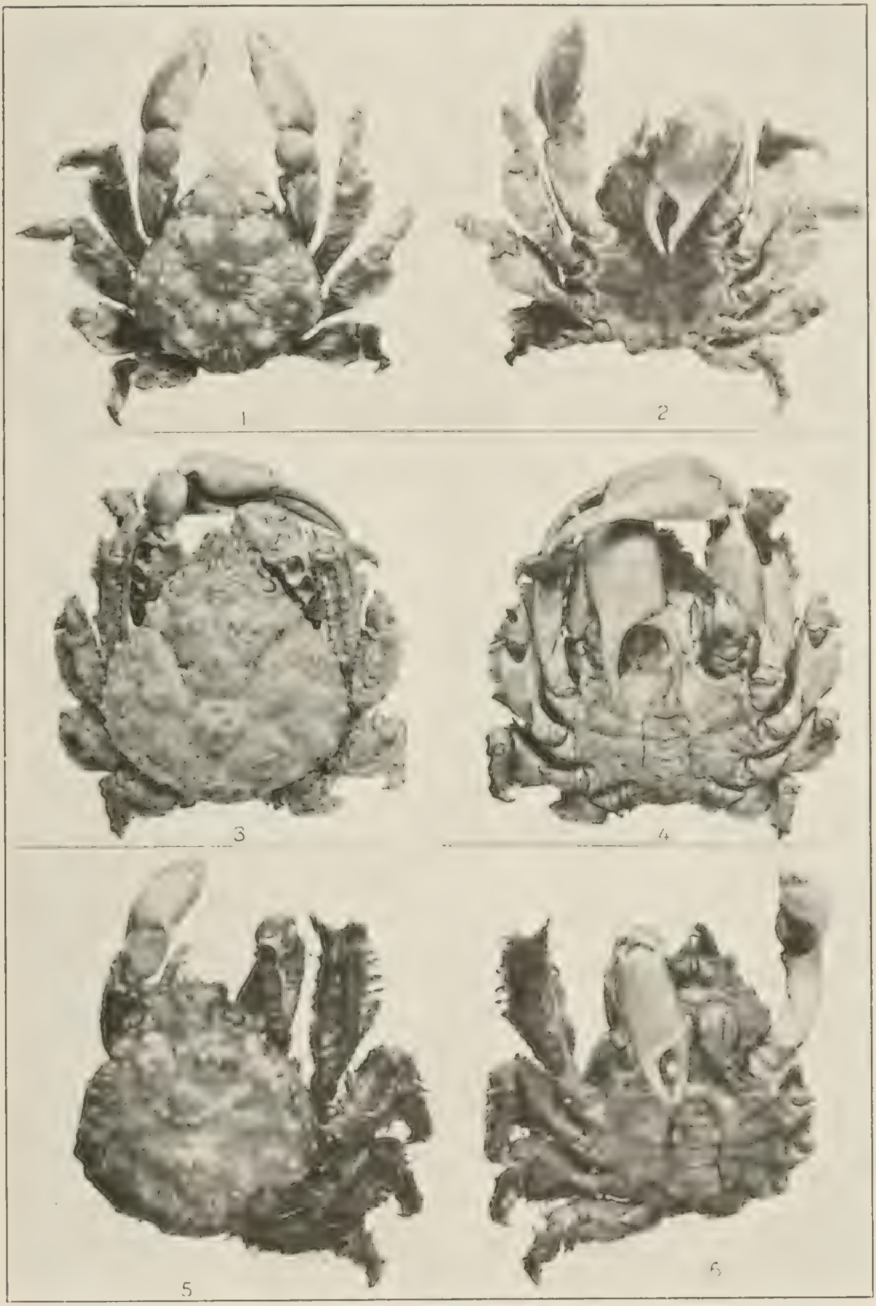
PARAMITHRAX BÄCKSTRÖMI. (PAGE 339)

FOR EXPLANATION OF PLATE SEE PAGE 576



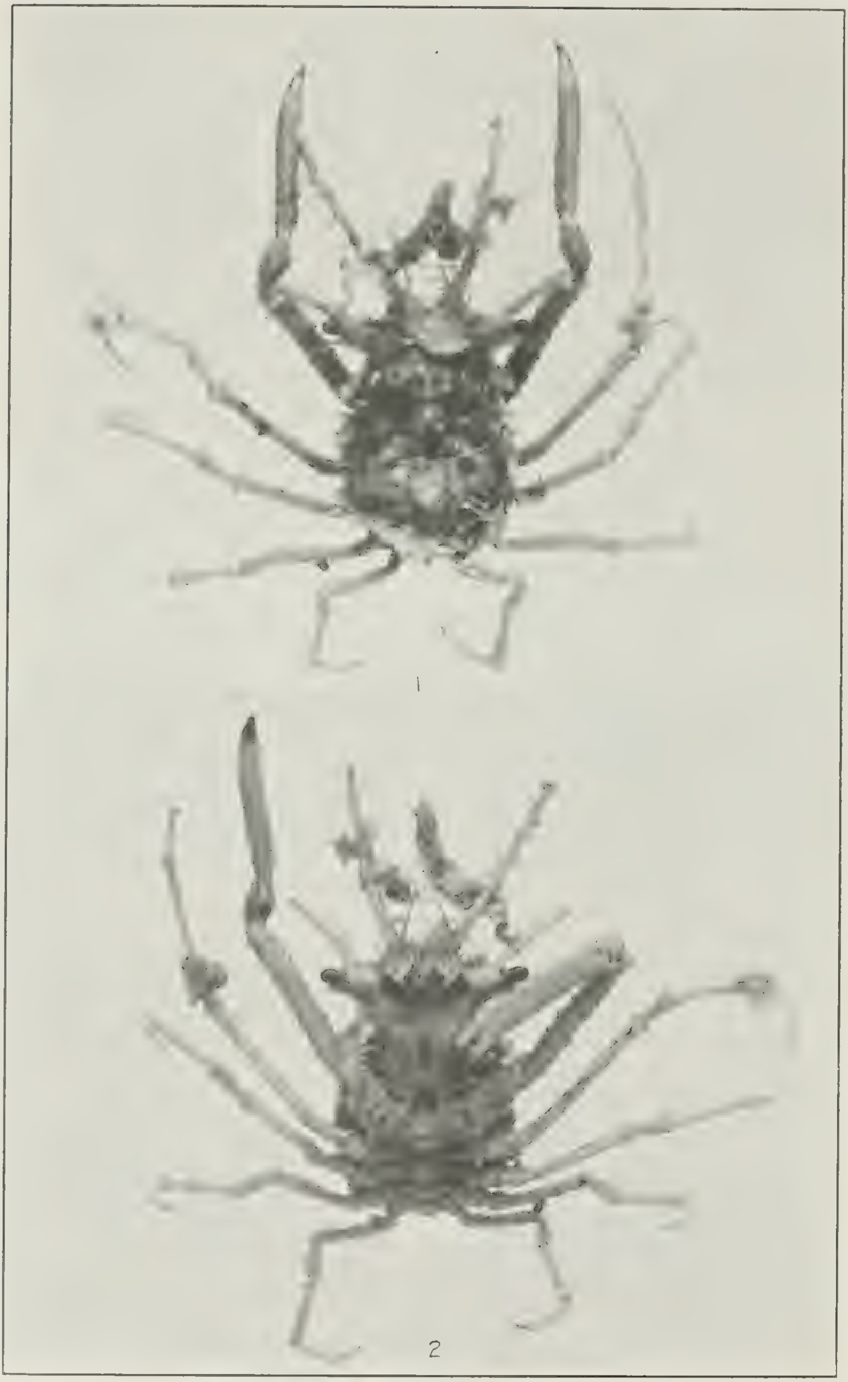
1. Hemus cristulipes. (Page 345.) 2, 3. H. analogus. (Page 347.) 4, 5. Thoe aspera. (Page 352)

For explanation of plate see page 576



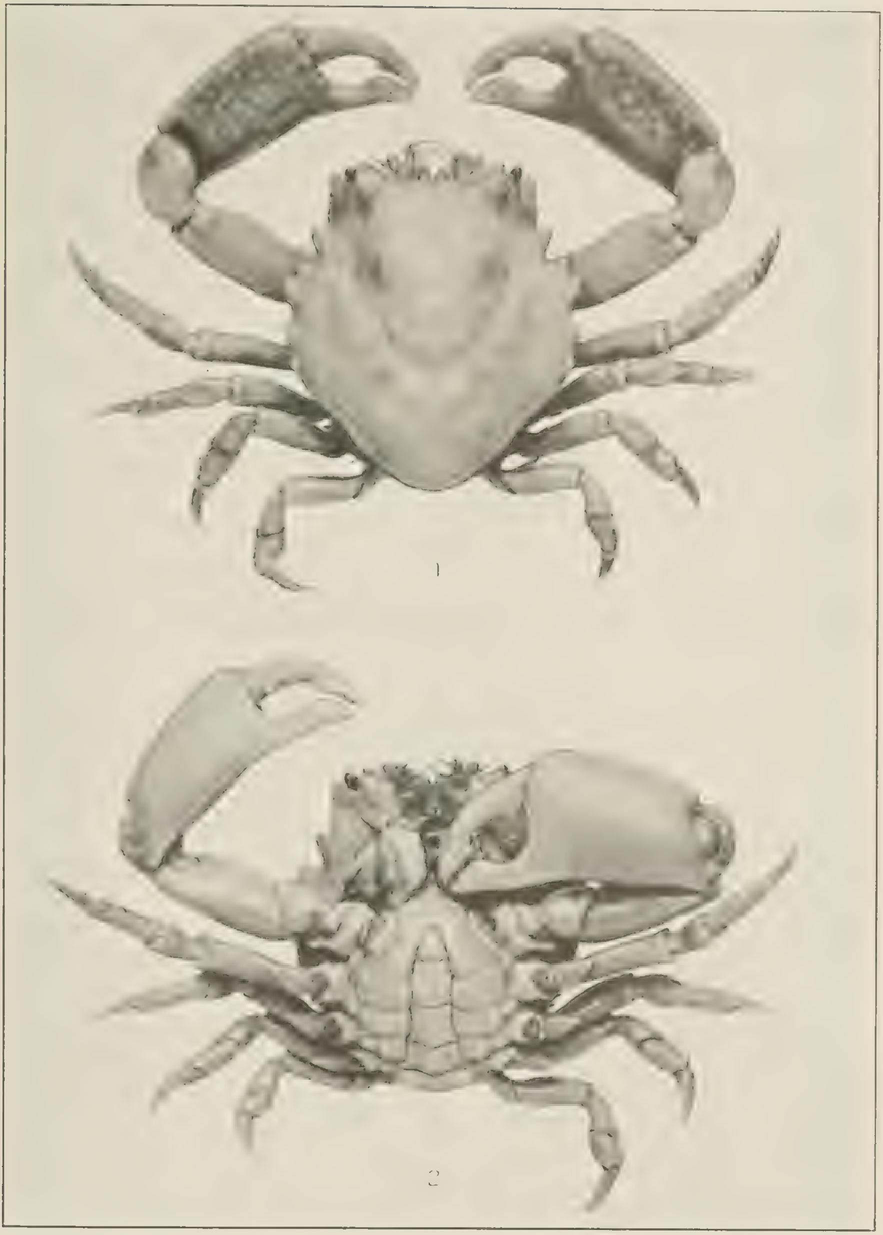
1, 2. THOE PUELLA. (PAGE 348.) 3, 4. T. SULCATA. (PAGE 349.) 5, 6. T. PANAMENSIS. (PAGE 351)

FOR EXPLANATION OF PLATE SEE PAGE 576



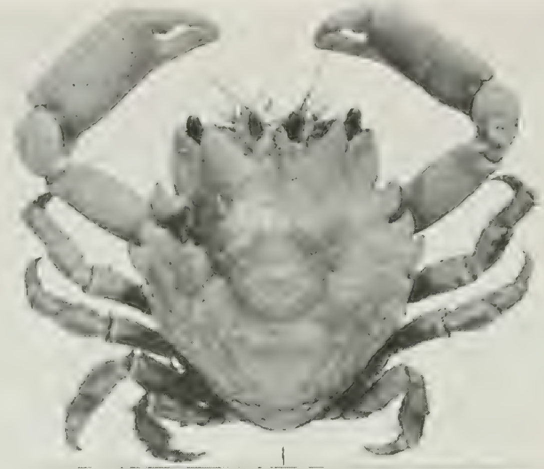
Picroceroides tubularis. (Page 354)

For explanation of plate see page 576



PITHO ACULEATA. (PAGE 357)

FOR EXPLANATION OF PLATE SEE PAGE 576



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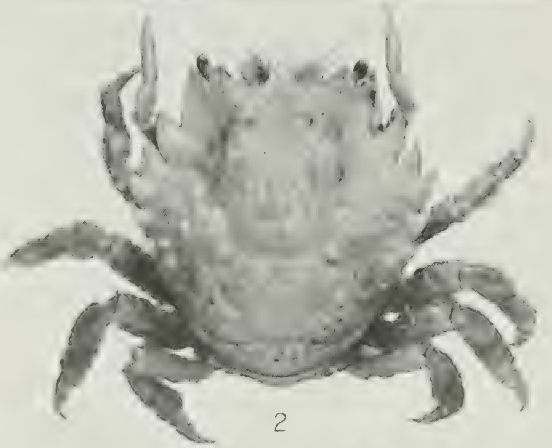

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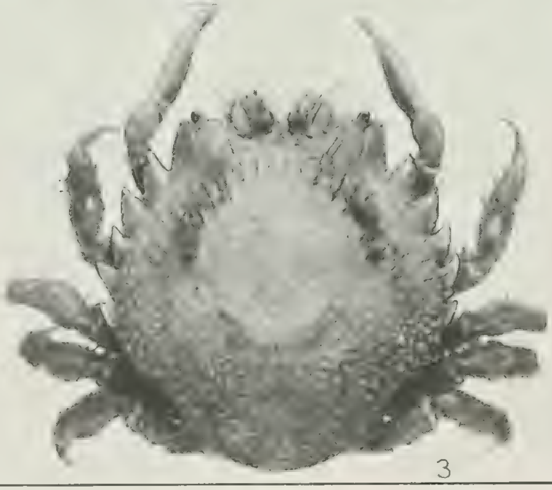

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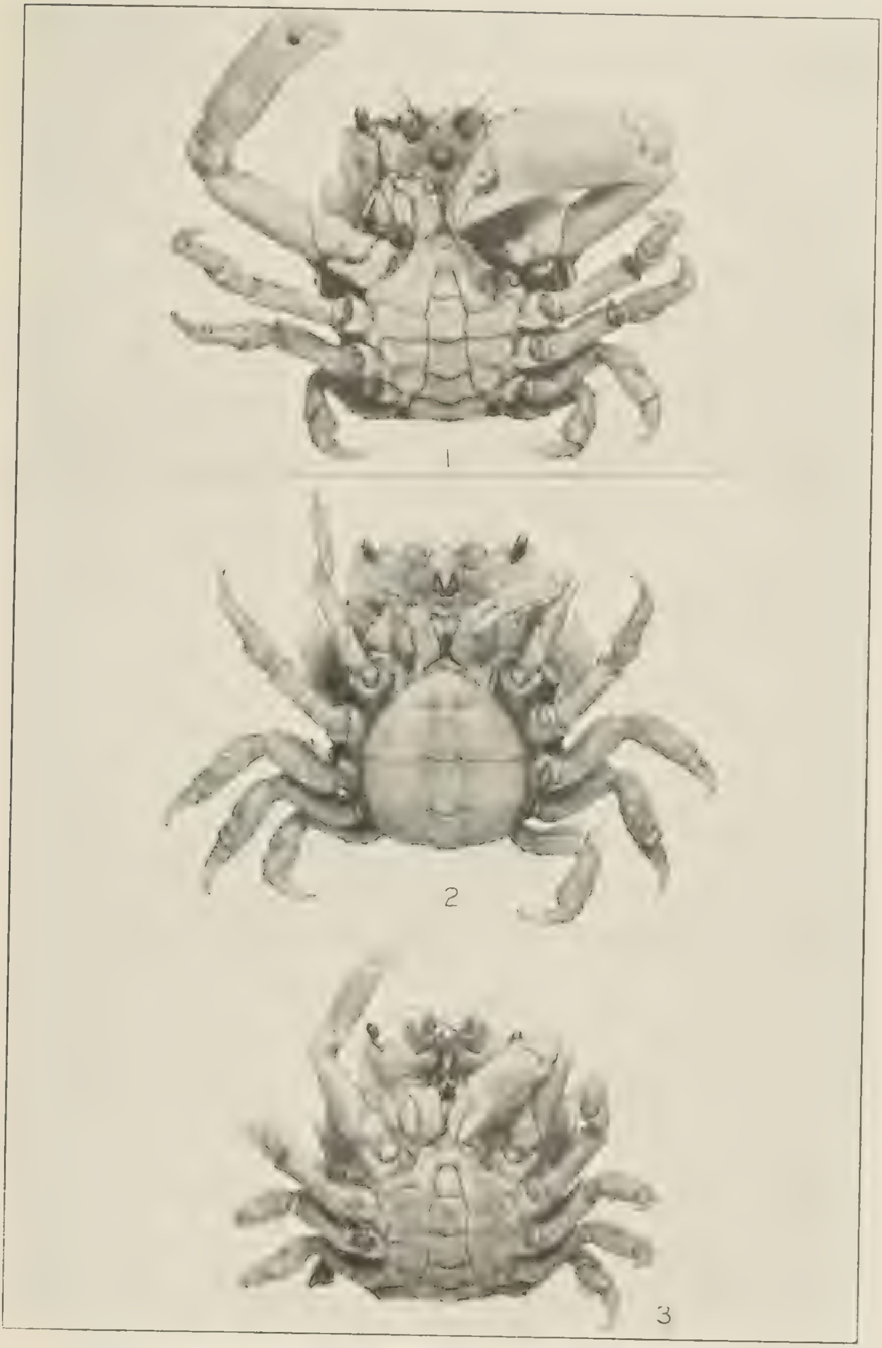
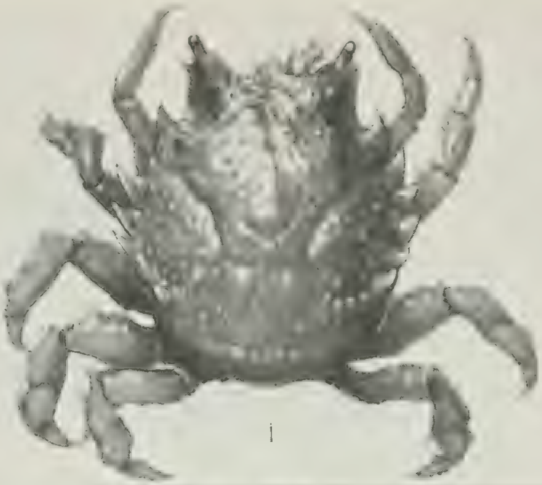
1, 2. Pitho lherminieri. (Page 362.) 3. P. mirabilis. (Page 366)

For explanation of plate see page 577



1, 2, Pitho lherminieri. (Page 362.) 3. P. mirabilis. (Page 366)

For explanation of plate see page 677



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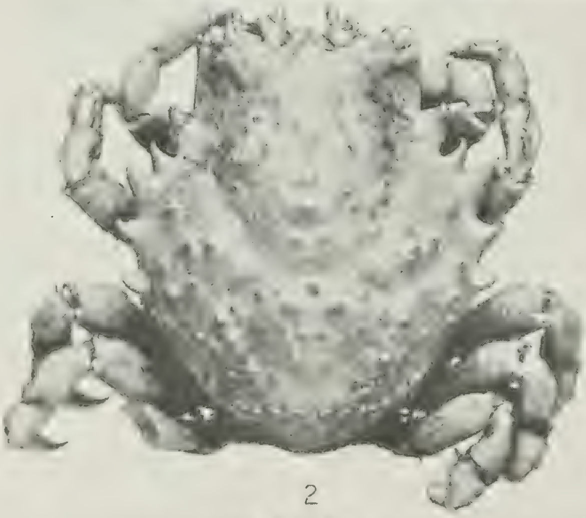

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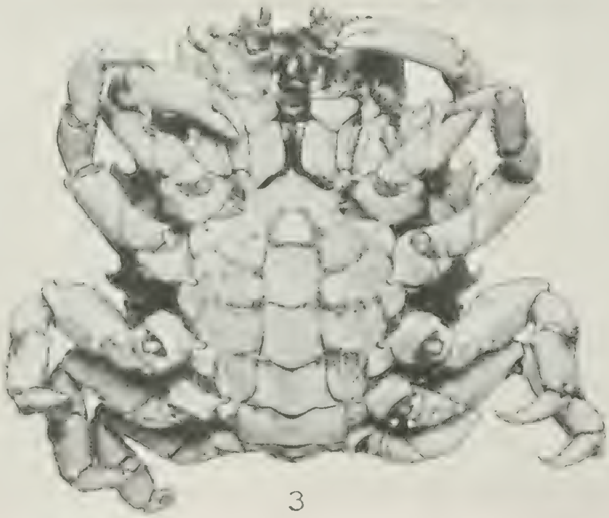

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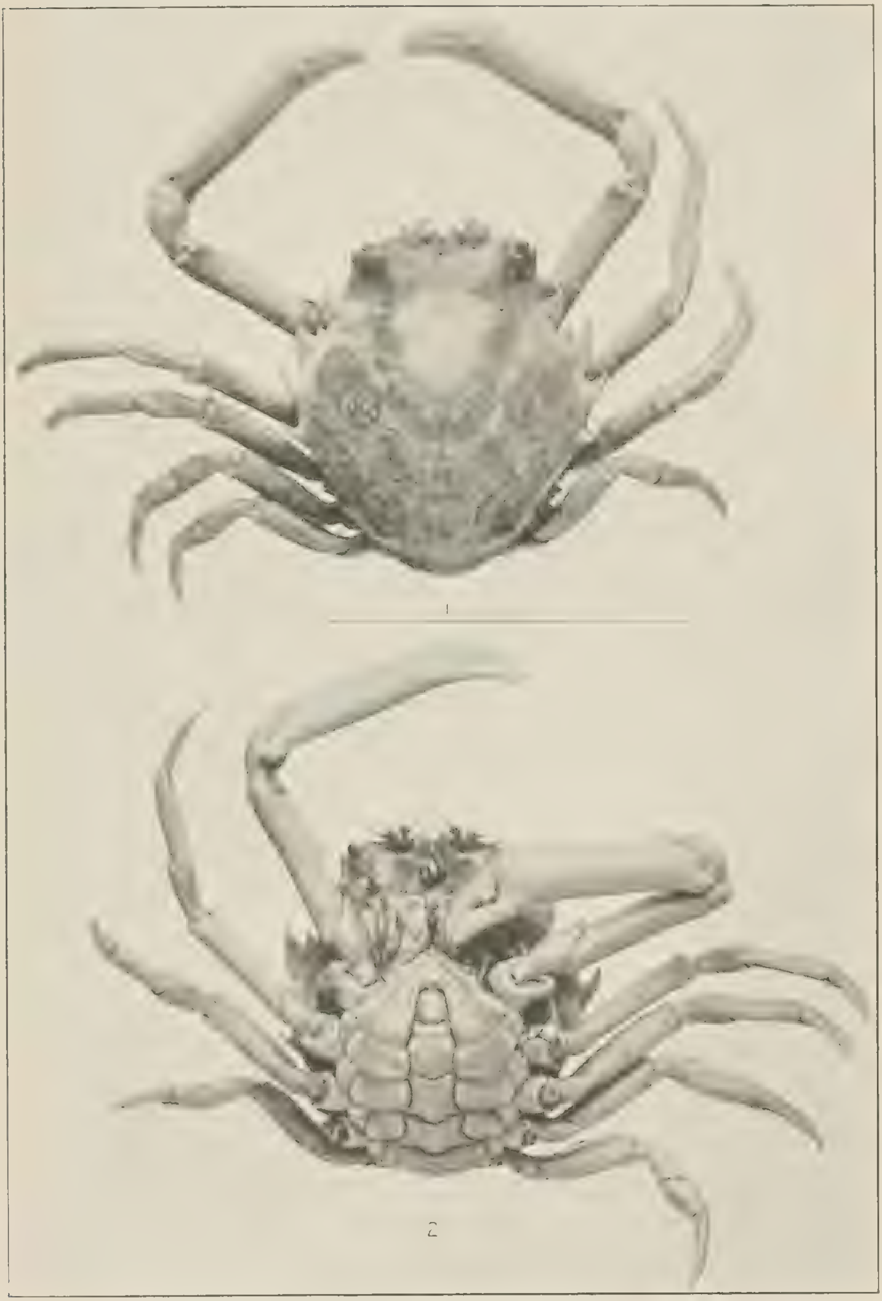
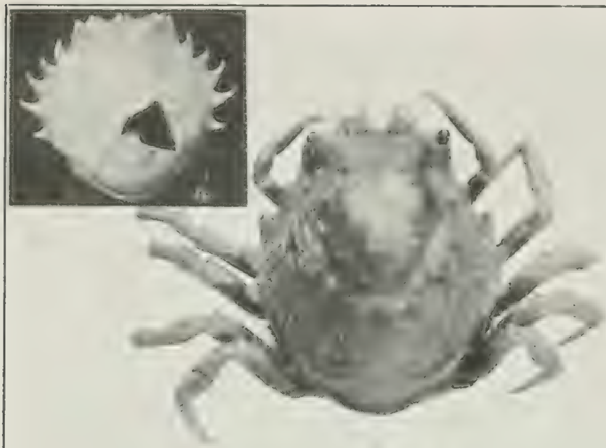
1. PITHO SEXDENTATA. (PAGE 367.) 2, 3. P. PICTETI. (PAGE 359)

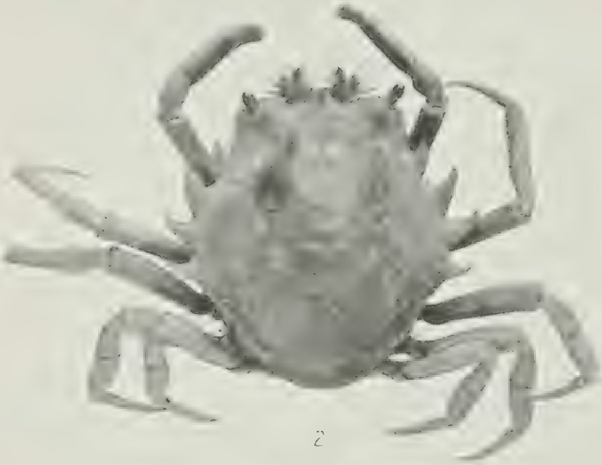
FOR EXPLANATION OF PLATE SEE PAGE 577



PITHO ANISODON. (PAGE 368)

FOR EXPLANATION OF PLATE SEE PAGE 577

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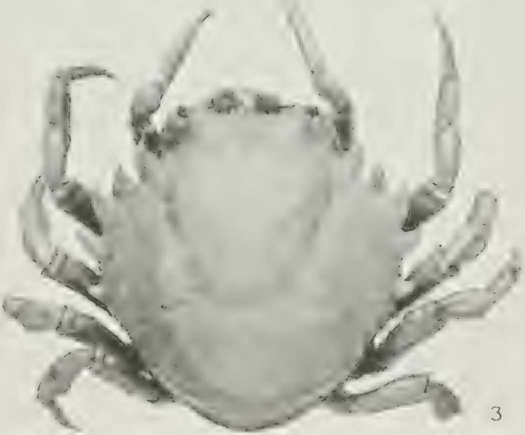
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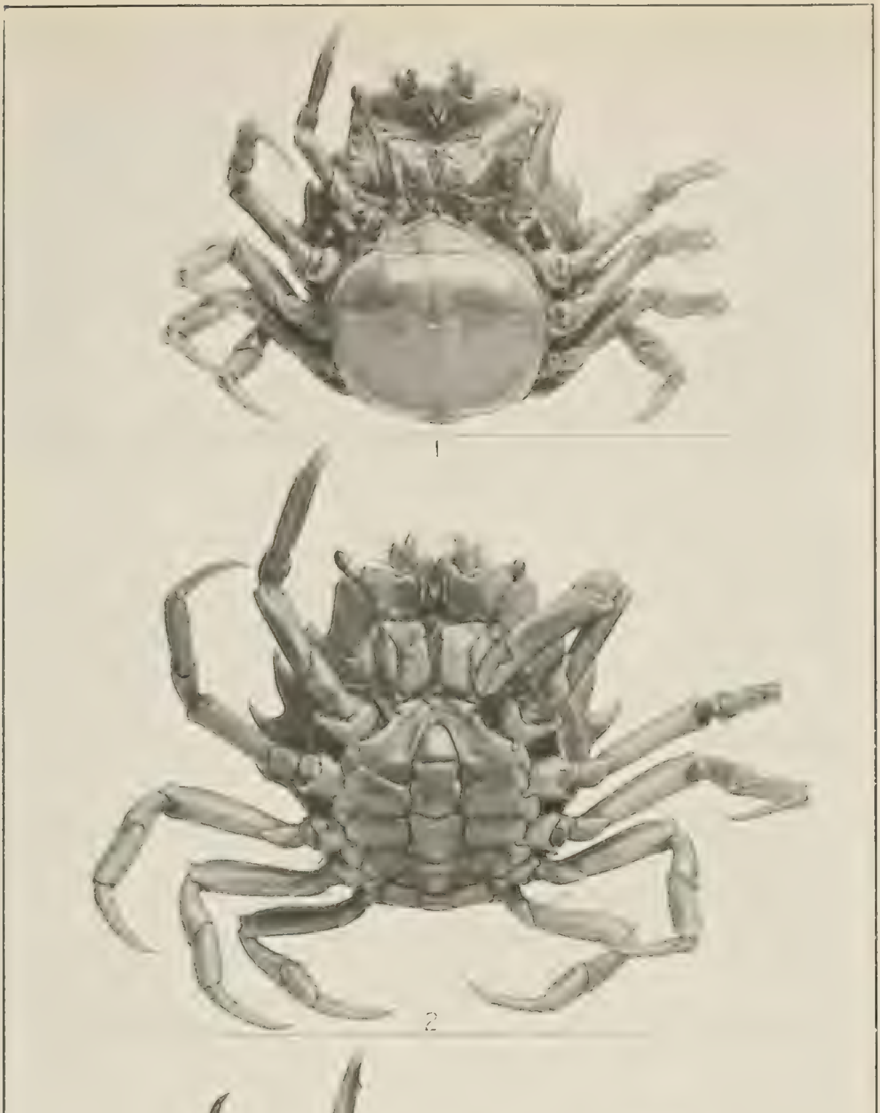
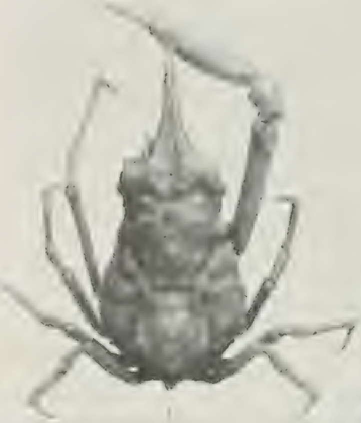
1. PITHO DISPAR. (PAGE 374.) 2. P. QUADRIDENTATA. (PAGE 369.) 3, 4. P. LAEVIGATA. (PAGE 372)

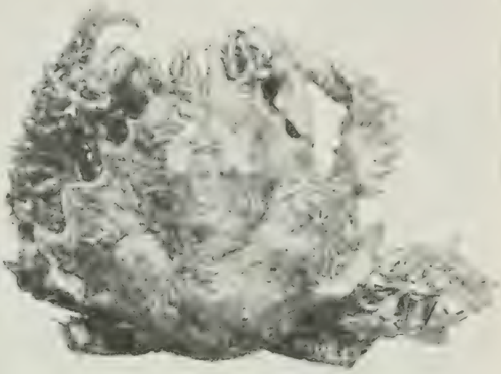
FOR EXPLANATION OF PLATE SEE PAGE 577



1. Pitho dispar. (Page 374.) 2. P. quadridentata. (Page 369.)
3. P. laevigata. (Page 372)

For explanation of plate see page 577





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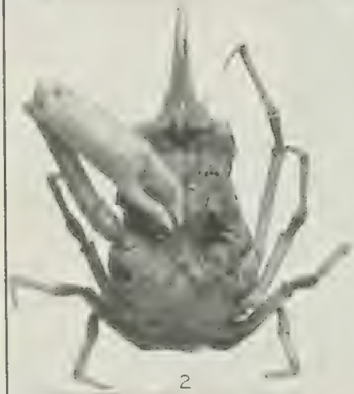

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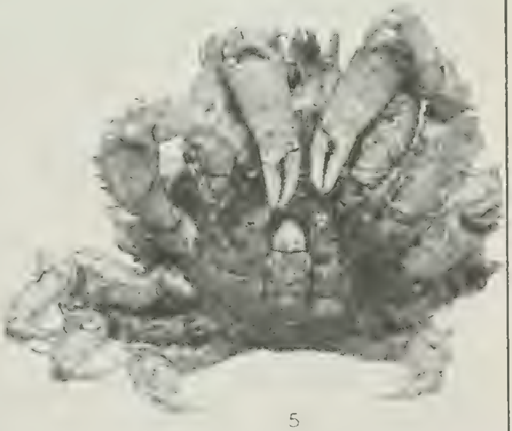

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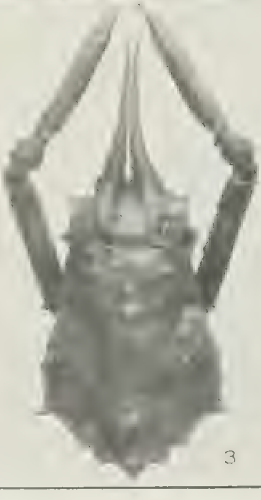

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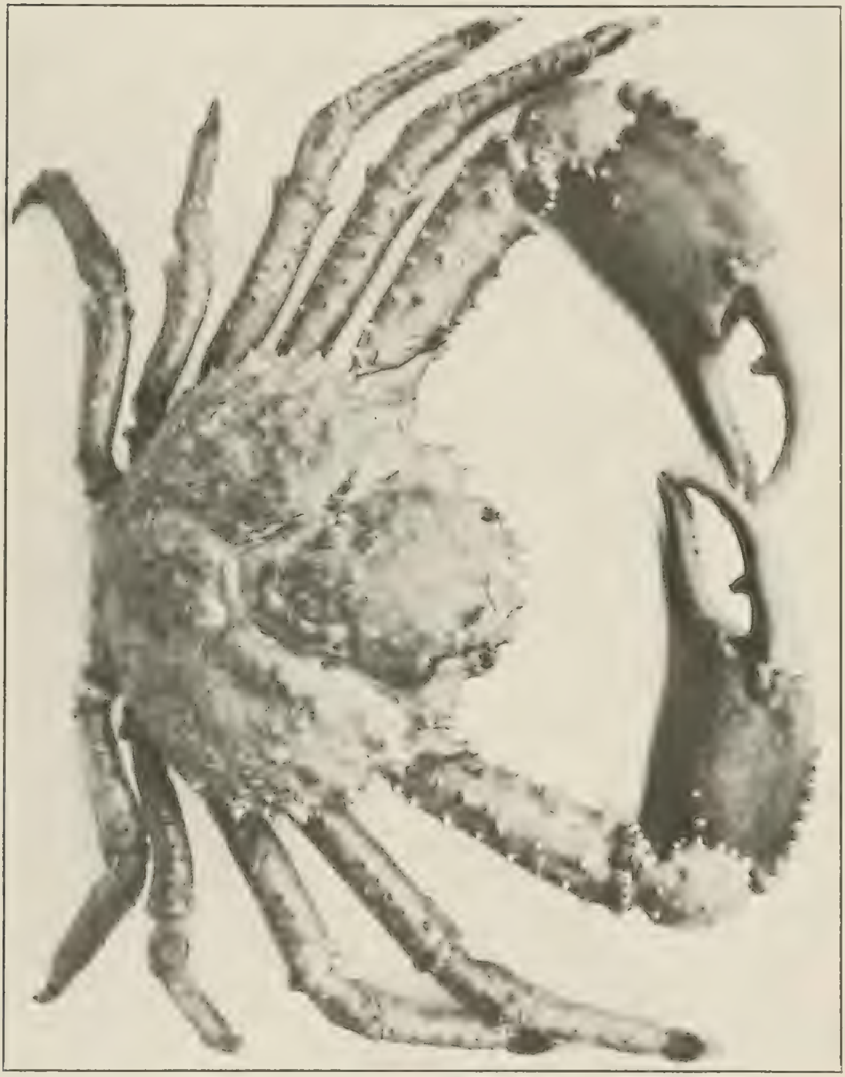
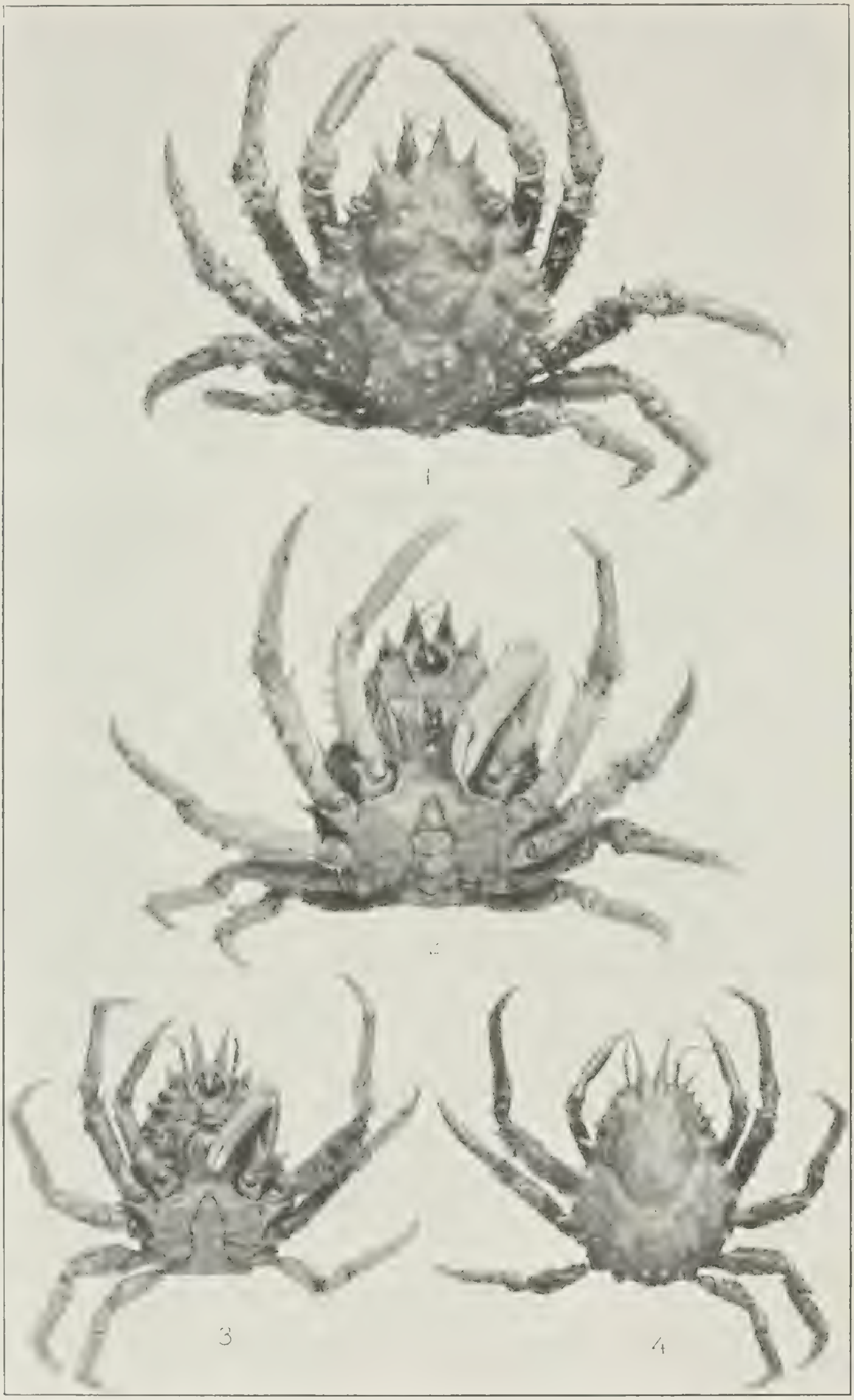
1–3. Leptopisa setirostris. (Page 375.) 4, 5. Anaptychus cornutus. (Page 378)

For explanation of plate see page 577



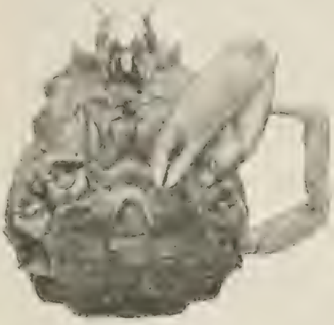
MITHRAX SPINOSISSIMUS. (PAGE 383)

FOR EXPLANATION OF PLATE SEE PAGE 577



1, 2. MITHRAX ACUTICORNIS. (PAGE 388.) 3, 4. M. SPINIPES. (PAGE 391)

FOR EXPLANATION OF PLATE SEE PAGE 577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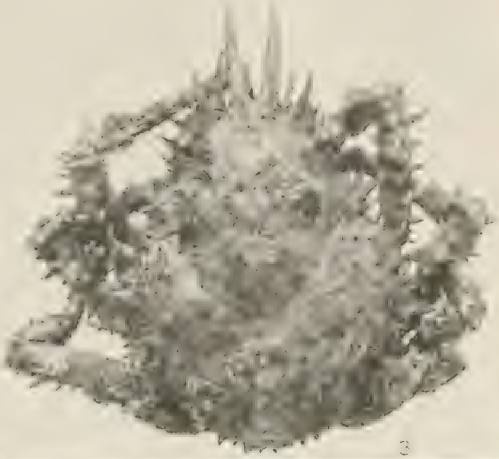
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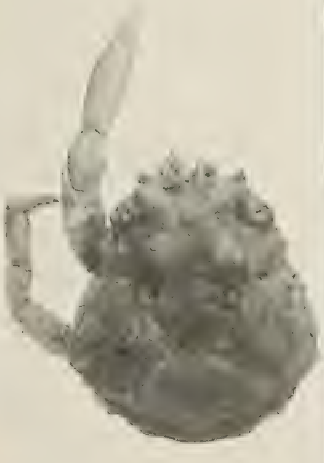
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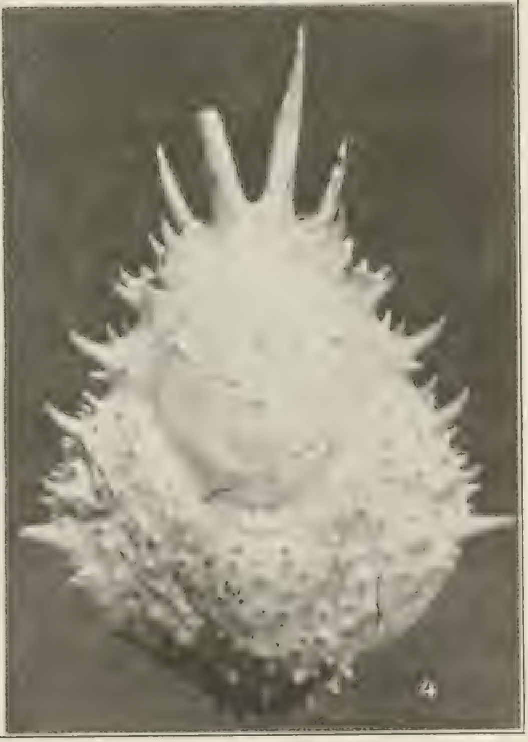
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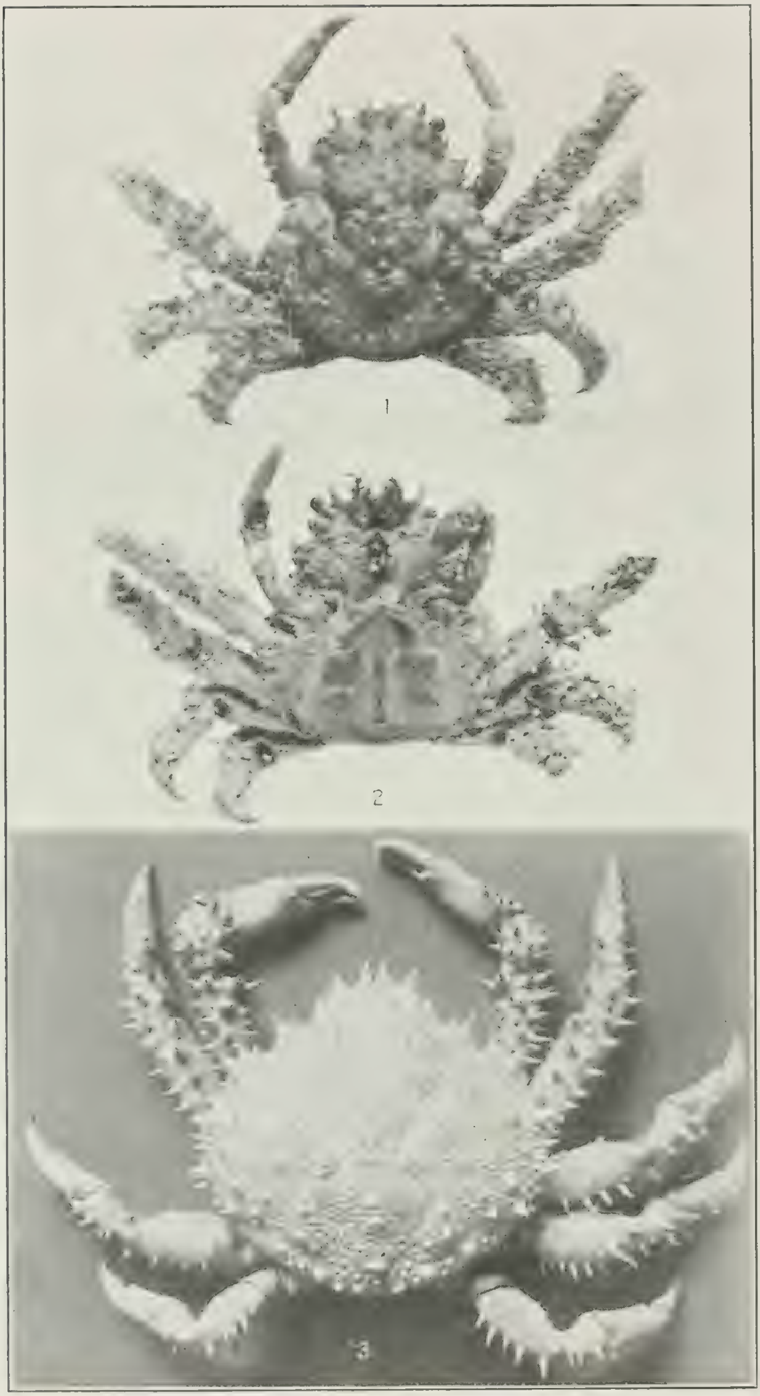
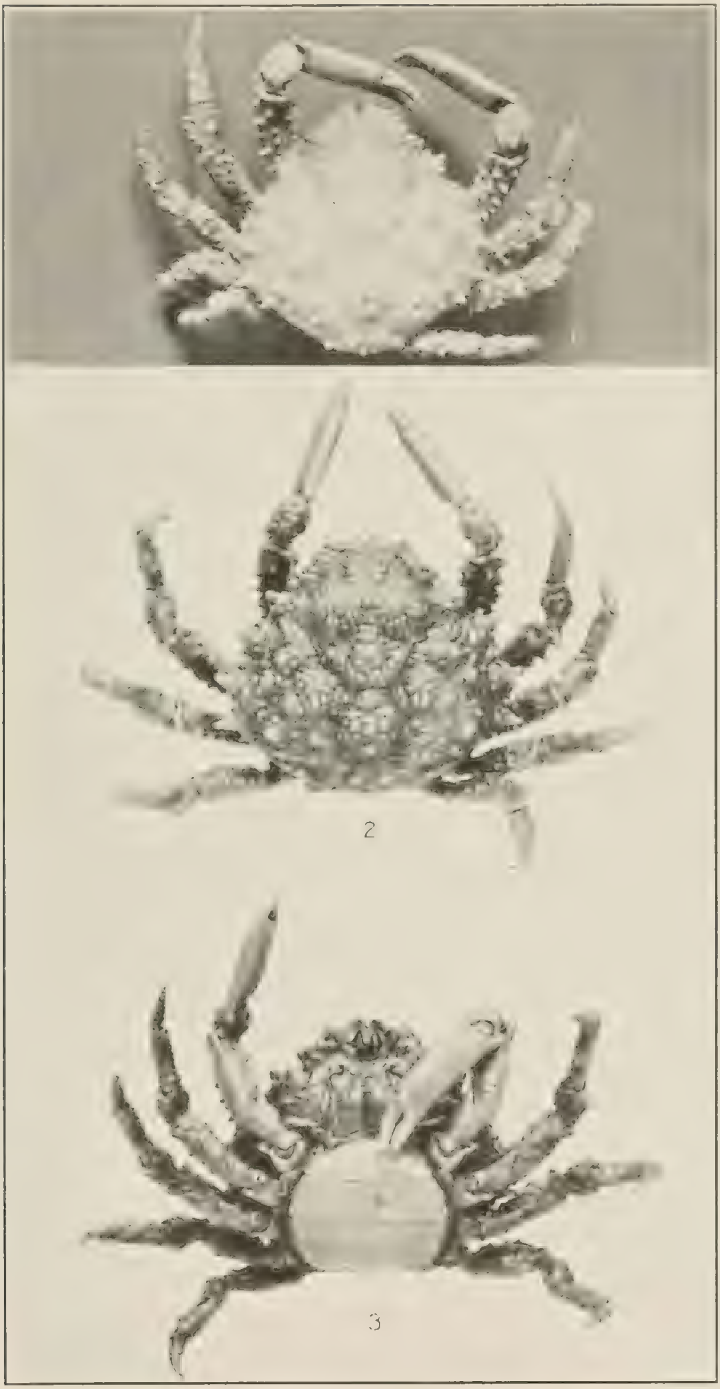
1, 2. MITHRAX BAHAMENSIS. (PAGE 393.) 3, 4. M. CORNUTUS. (PAGE 386)

FOR EXPLANATION OF PLATE SEE PAGES 577 AND 578



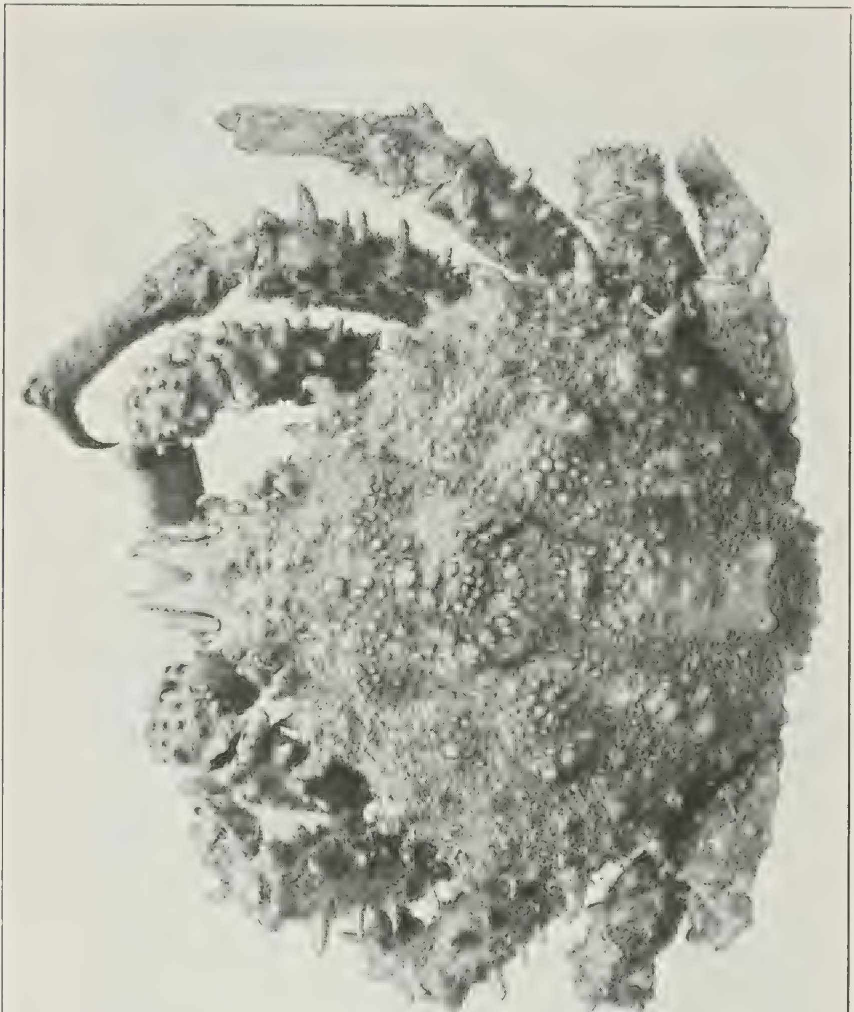
1, 2. Mithrax holderi. (Page 392.) 3. M. pilosus. (Page 394)

For explanation of plate see page 578



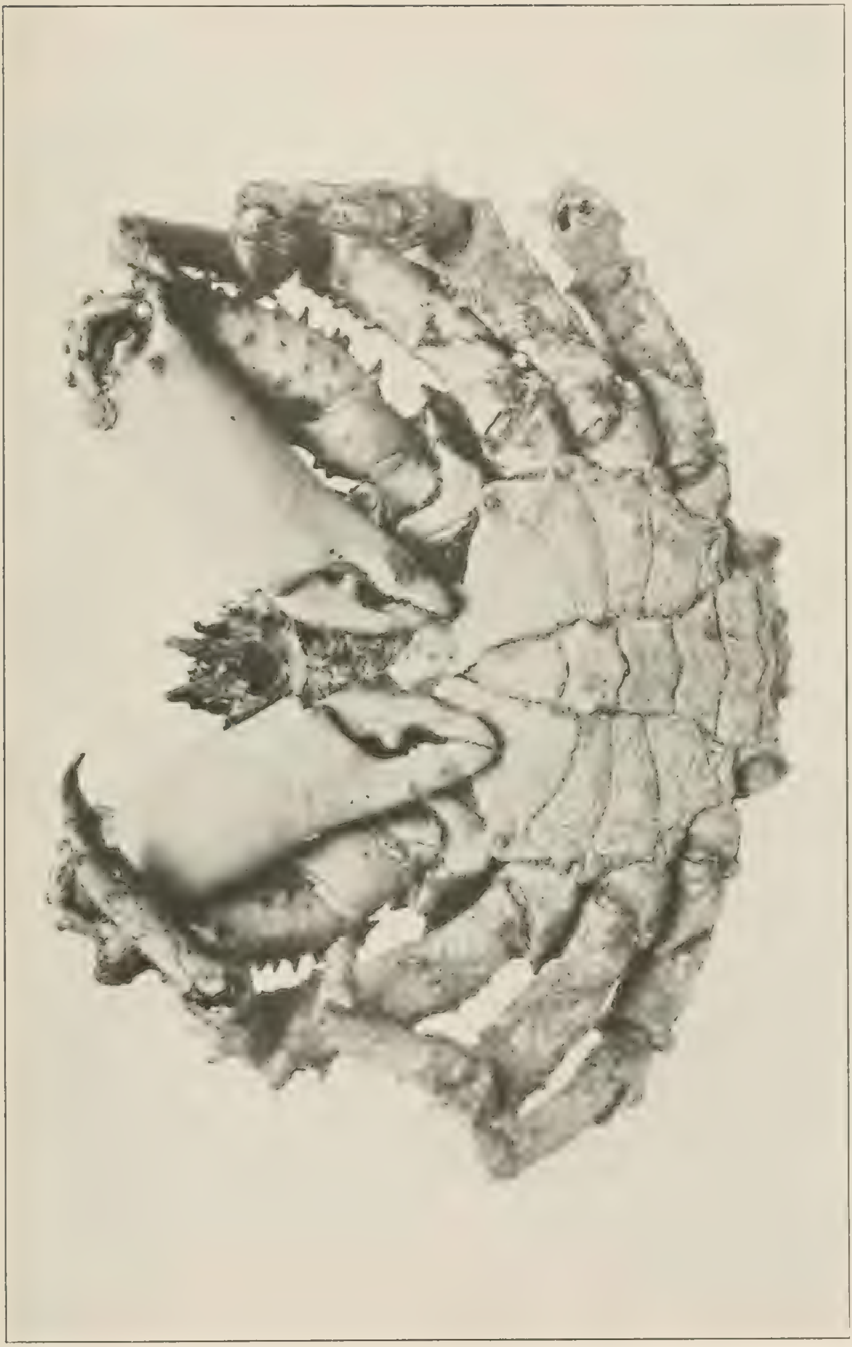
Mithrax hemphilli. (Page 395)

For explanation of plate see page 578



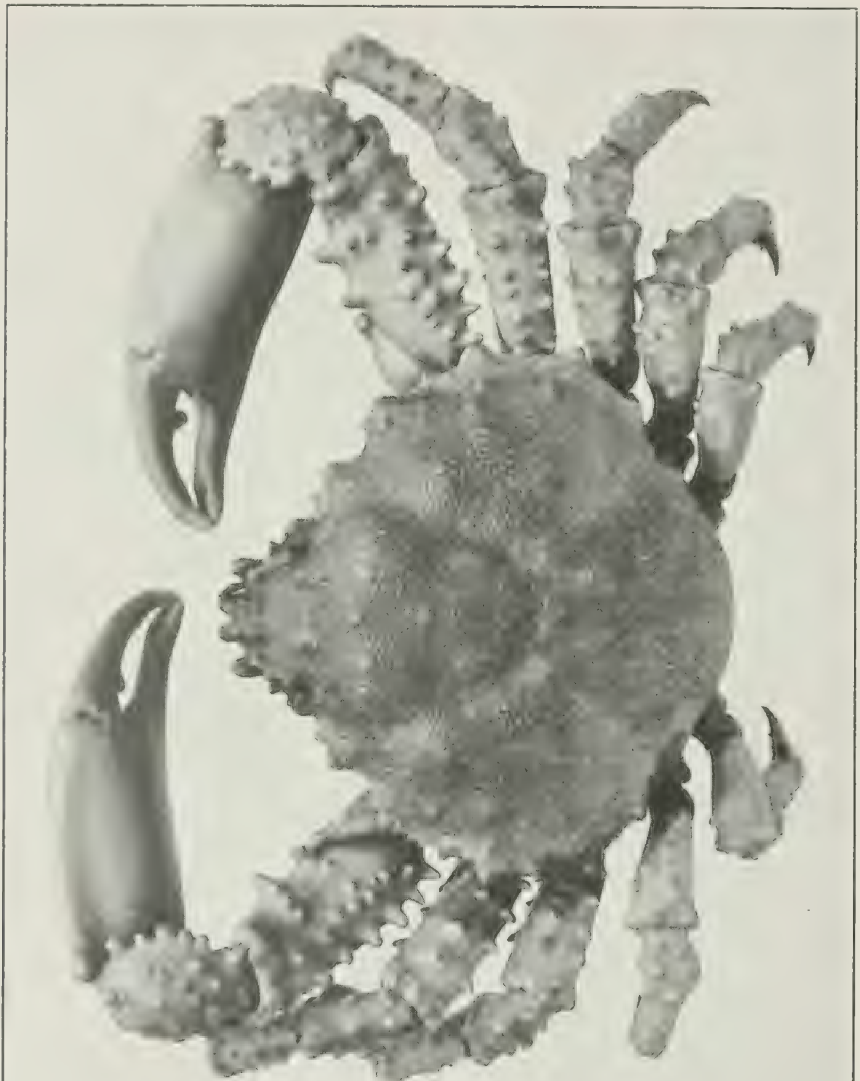
MITHRAX ORCUTTI. (PAGE 397)

FOR EXPLANATION OF PLATE SEE PAGE 578



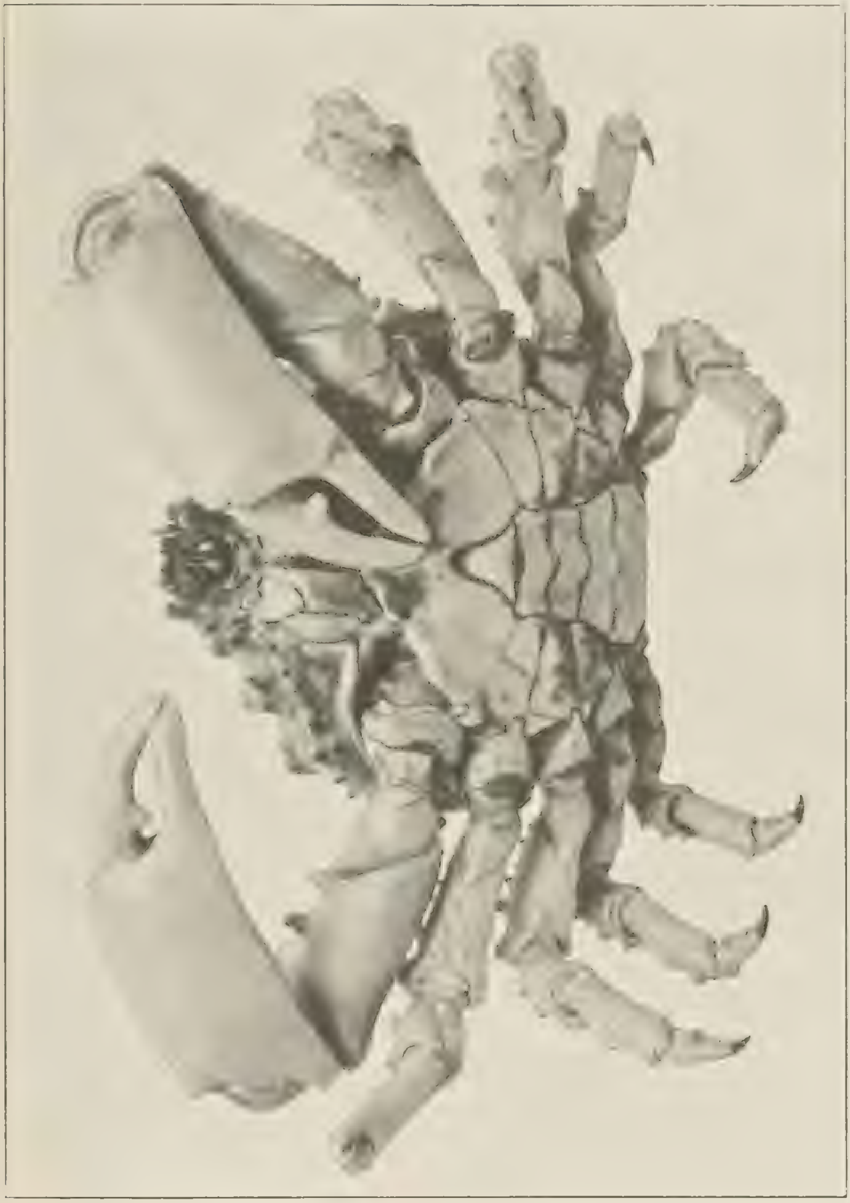
Mithrax orcutti. (Page 397)

For explanation of plate see page 578



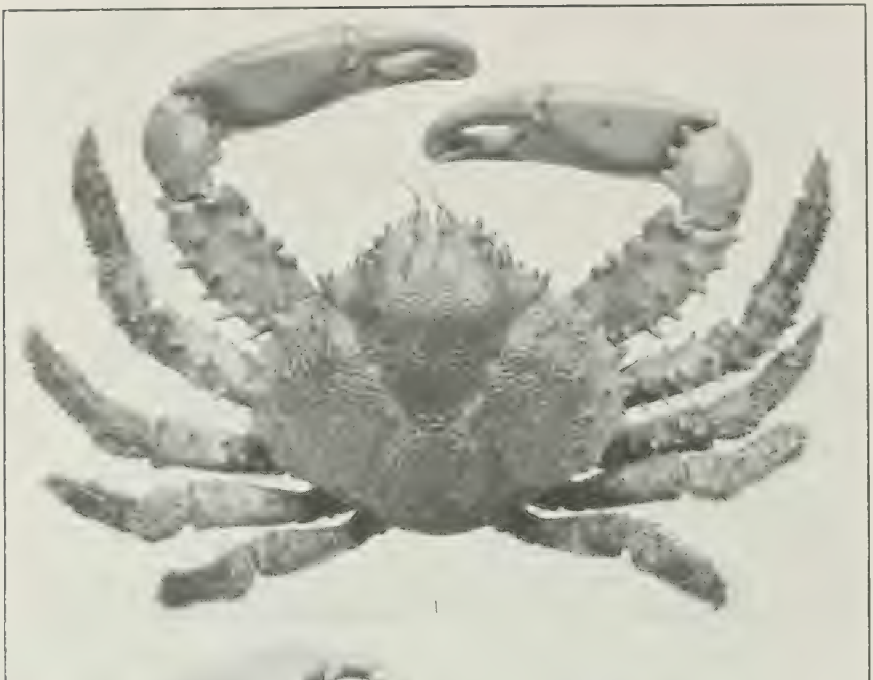
MITHRAX BELLII. (PAGE 403)

FOR EXPLANATION OF PLATE SEE PAGE 578



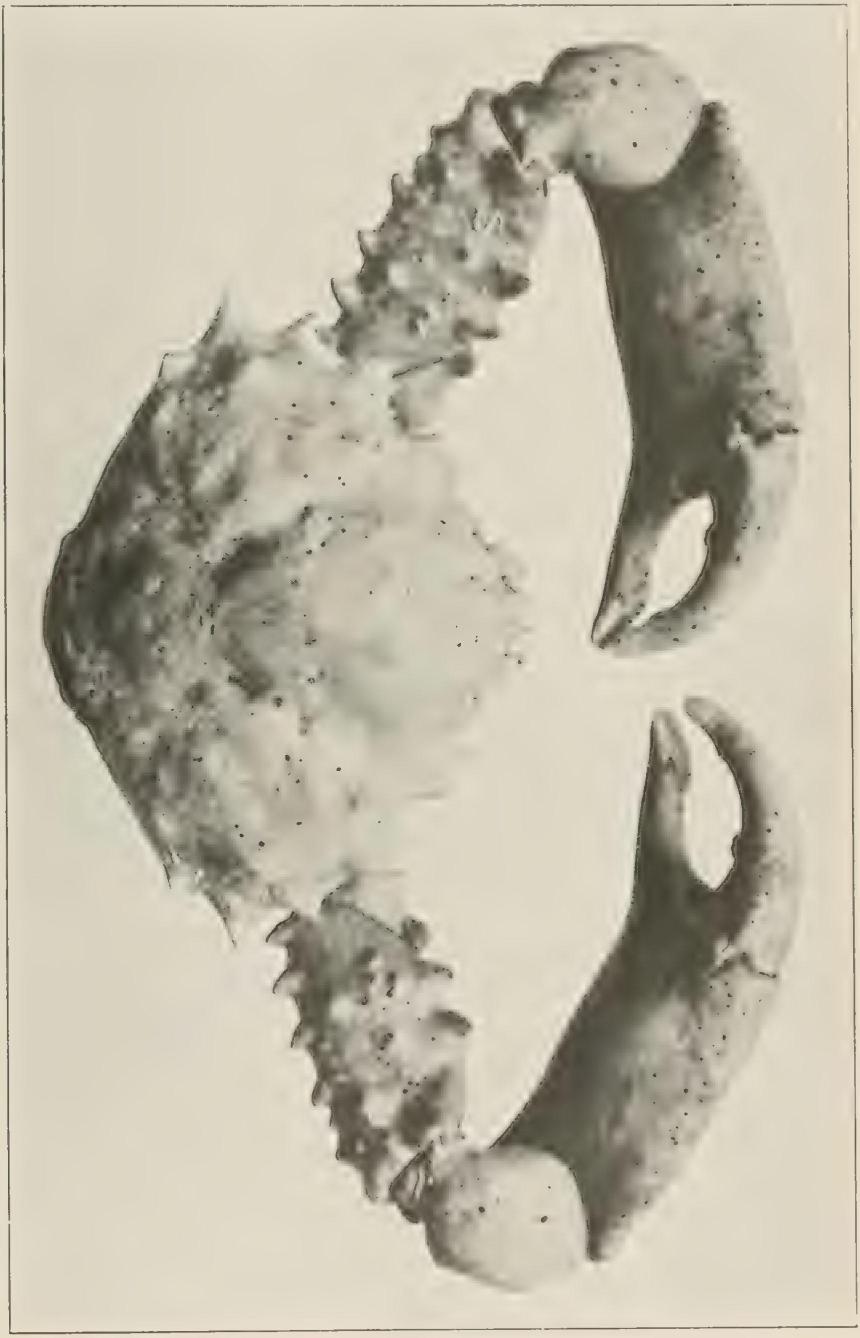
MITHRAX BELLII. (PAGE 403)

FOR EXPLANATION OF PLATE SEE PAGE 578



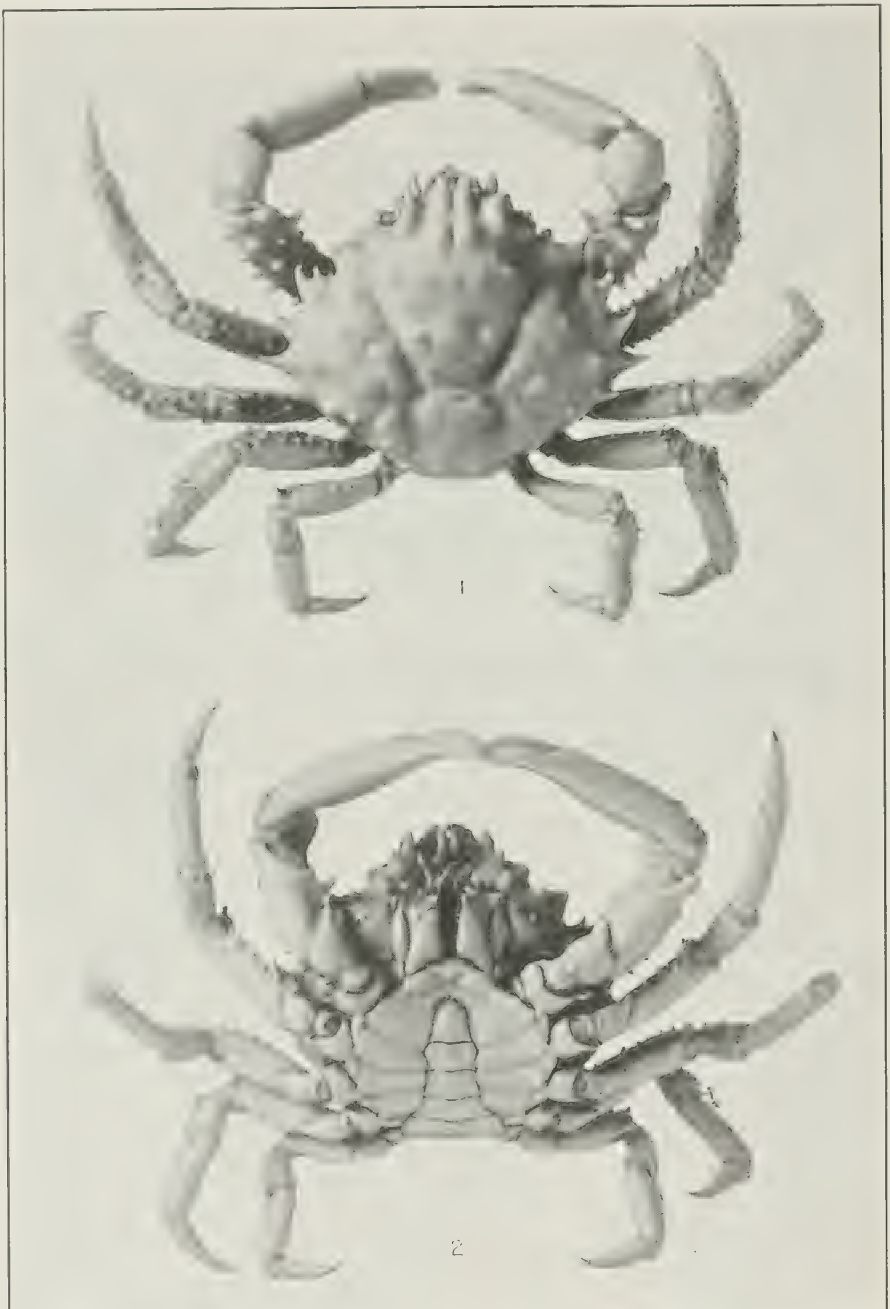
Mithrax verrucosus. (Page 400)

For explanation of plate see page 578



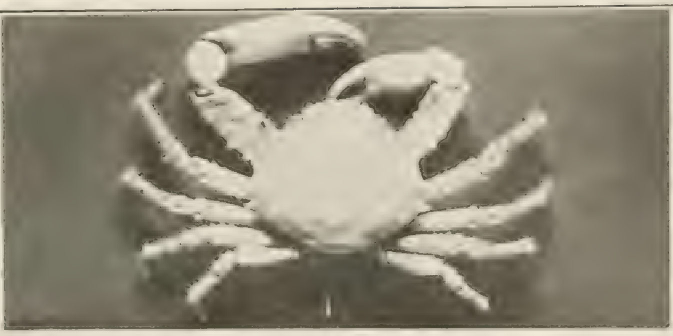
MITHRAX HISPIDUS. (PAGE 406)

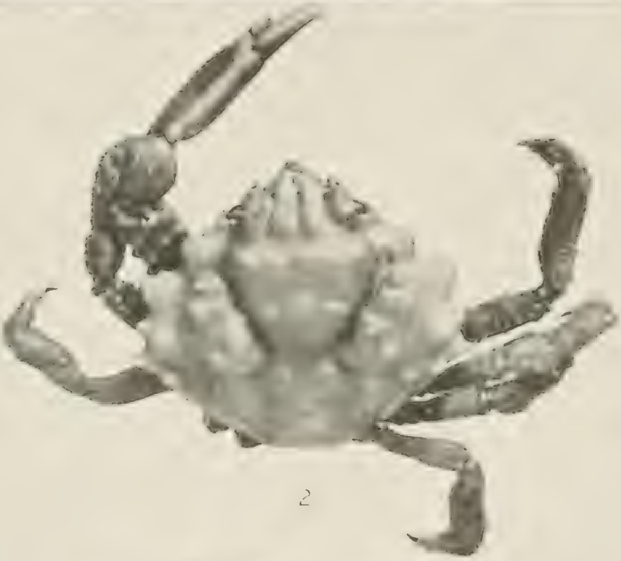
FOR EXPLANATION OF PLATE SEE PAGE 578



MITHRAX HISPIDUS. (PAGE 406)

FOR EXPLANATION OF PLATE SEE PAGE 578





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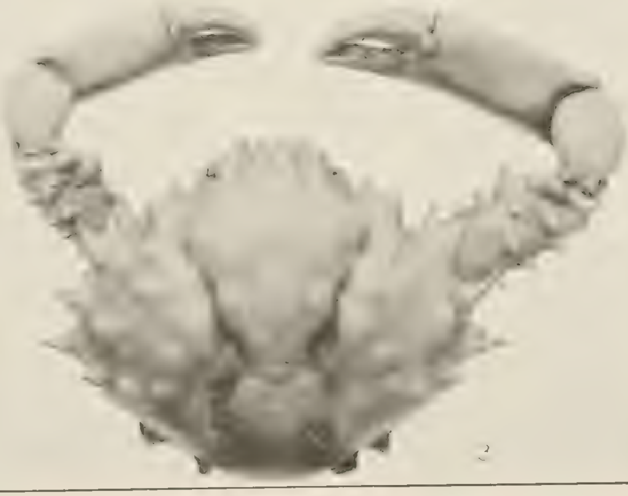
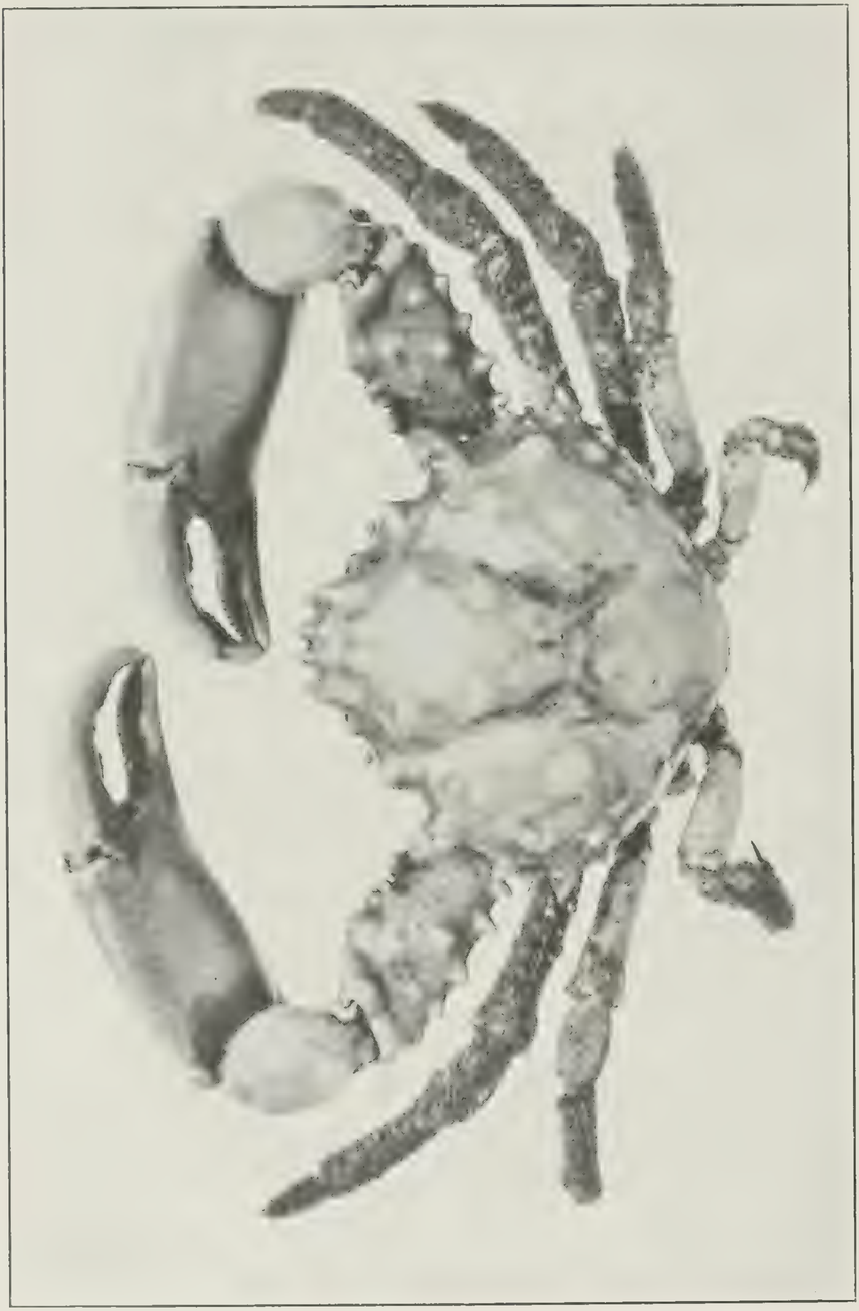


3

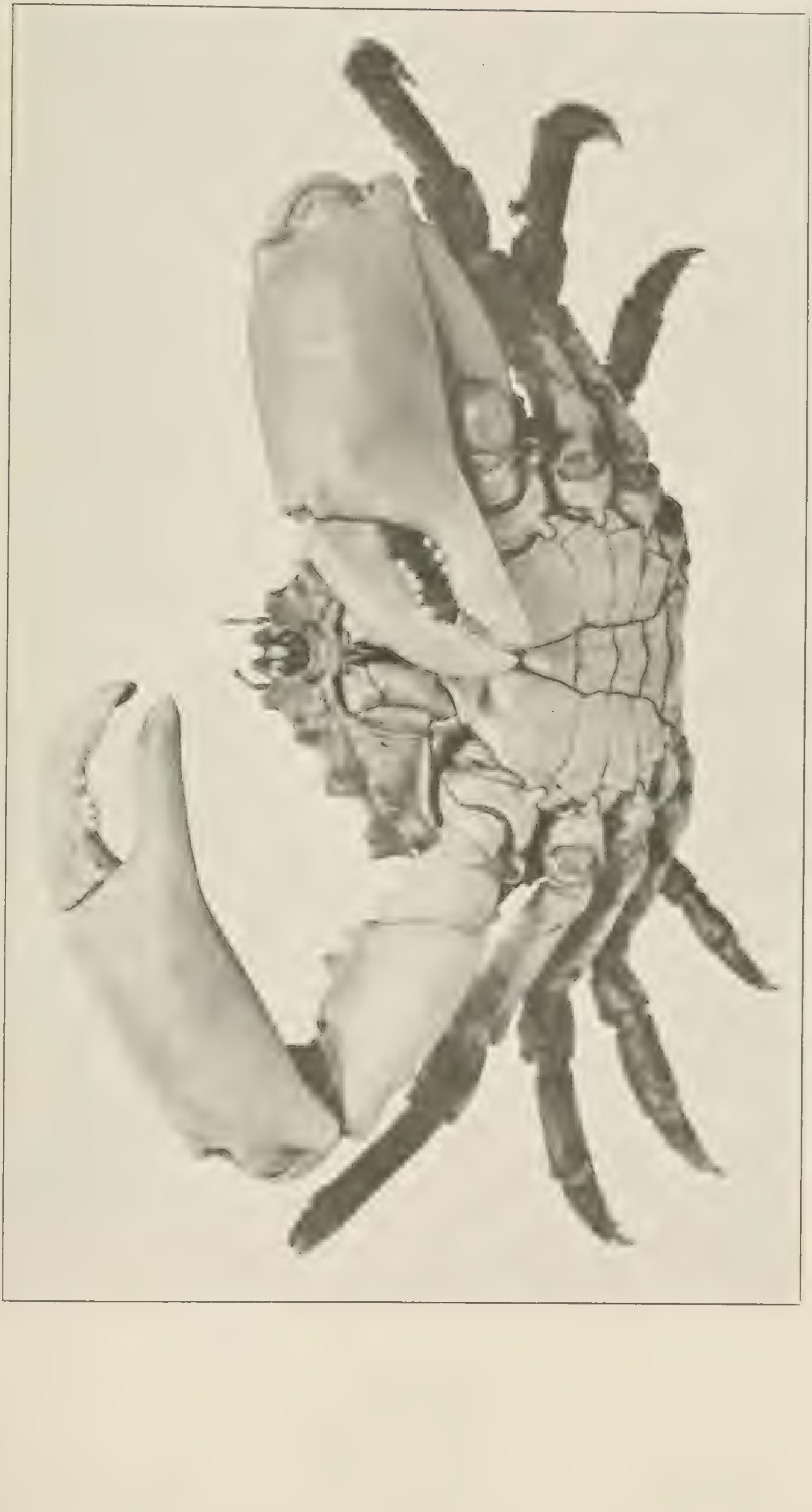
1. Mithrax braziliensis. (Page 404.) 2. M. tortugae. (Page 417.) 3. M. hispidus, var. (Page 408)

For explanation of plate see page 578



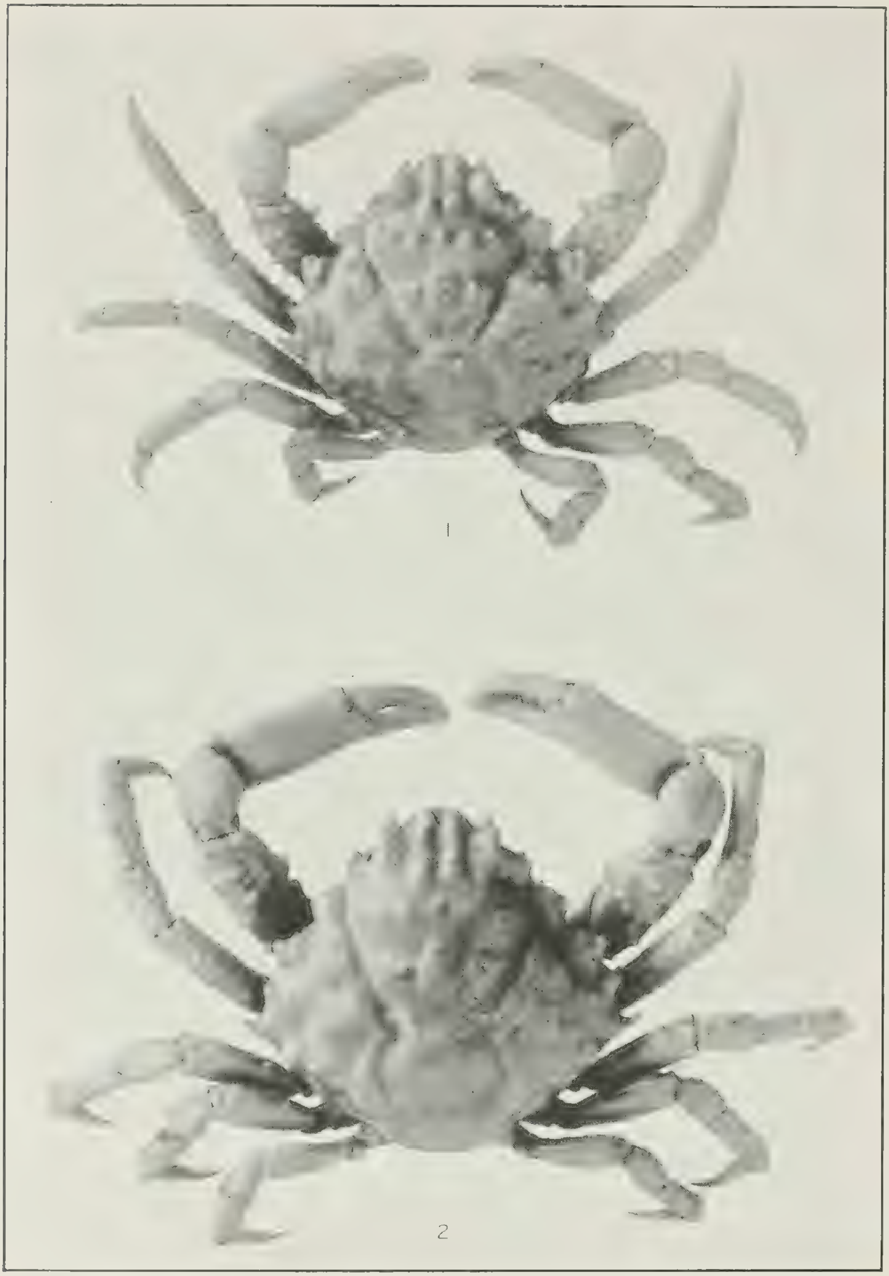
MITHRAX CARIBBAEUS. (PAGE 409)

FOR EXPLANATION OF PLATE SEE PAGE 578



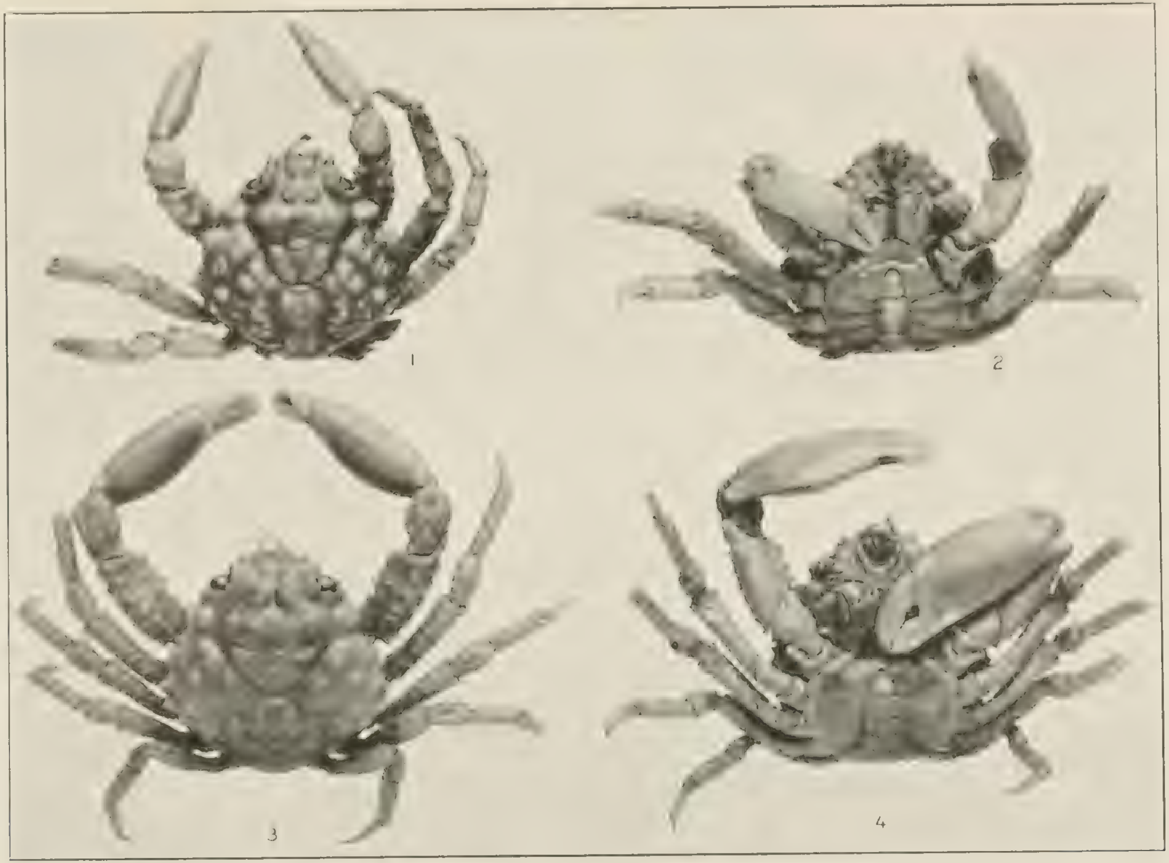
MITHRAX CARIBBAEUS. (PAGE 409)

FOR EXPLANATION OF PLATE SEE PAGE 579



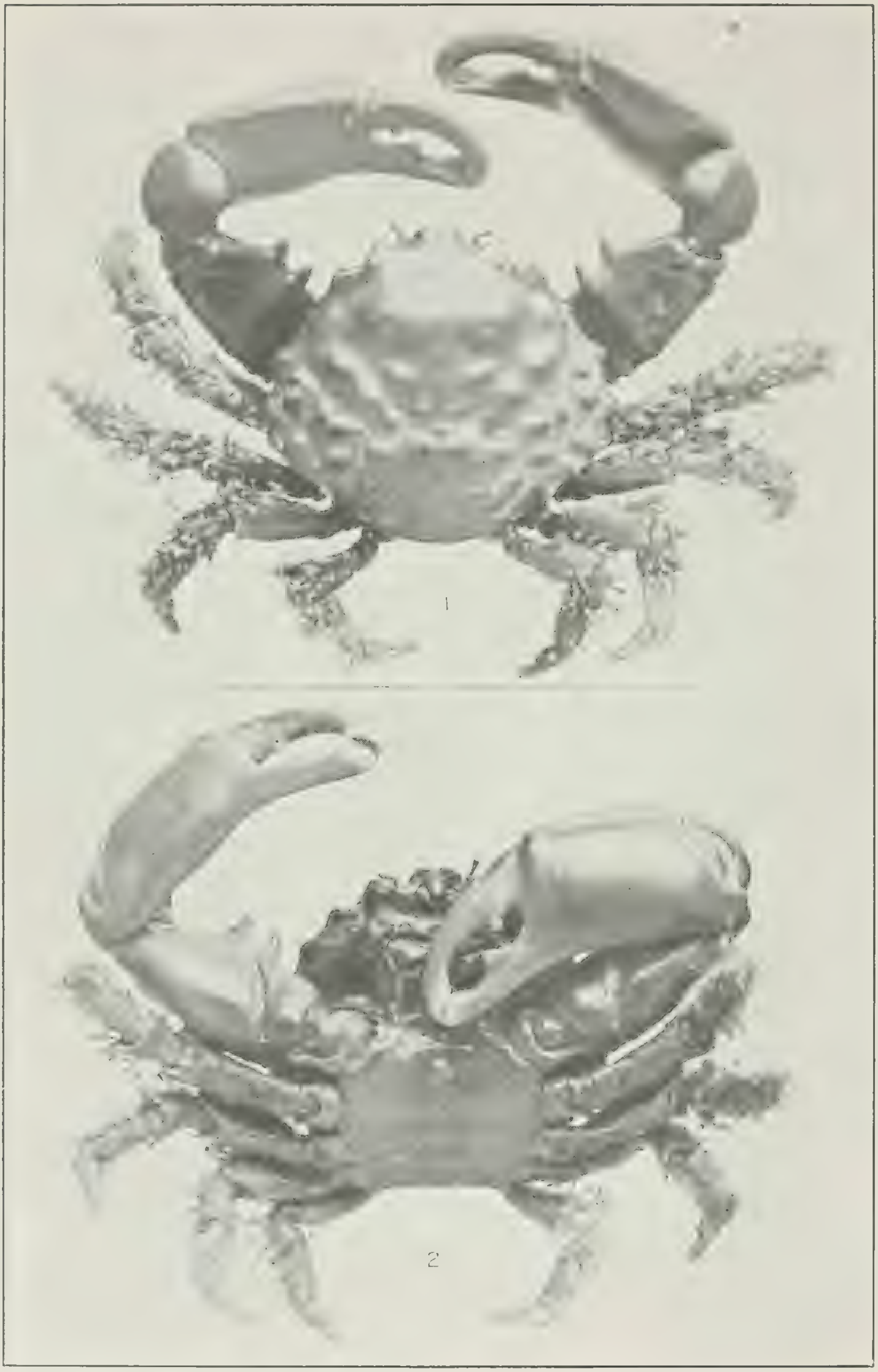
Mithrax pleuracanthus. (Page 411)

For explanation of plate see page 579



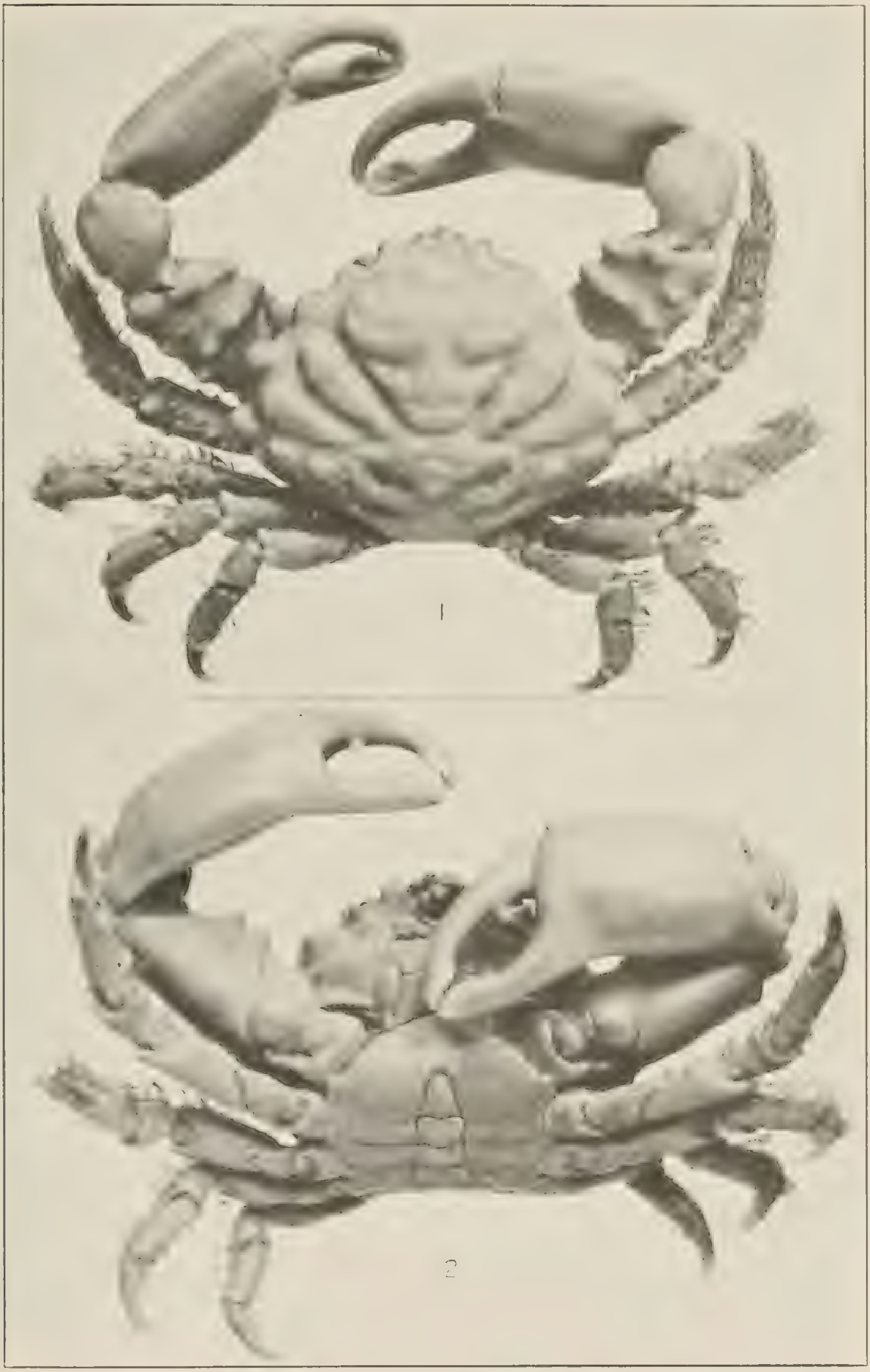
1, 2. MITHRAX TUBERCULATUS. (PAGE 418.) 3, 4. M. SINENSIS. (PAGE 419)

FOR EXPLANATION OF PLATE SEE PAGE 579



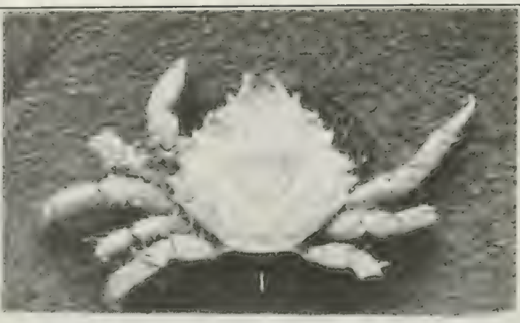
Mithrax (Mithraculus) sculptus. (Page 422)

For explanation of plate see page 579



Mithrax (Mithraculus) coryphe. (Page 426)

For explanation of plate see page 579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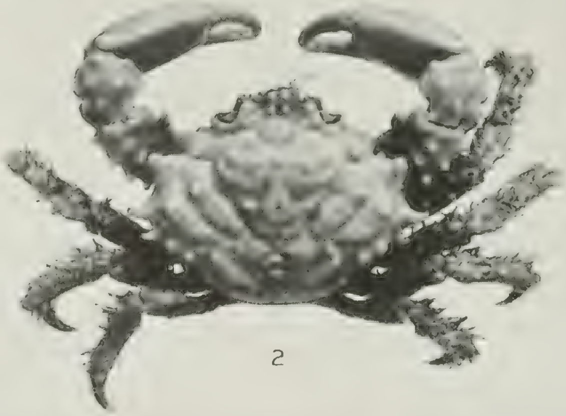
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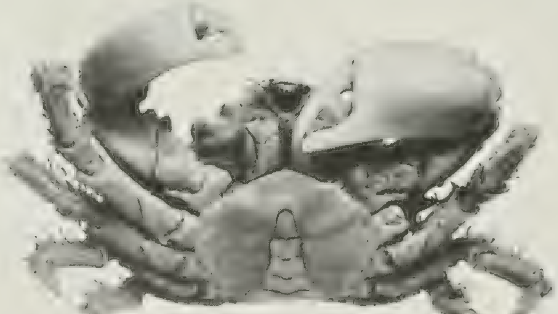
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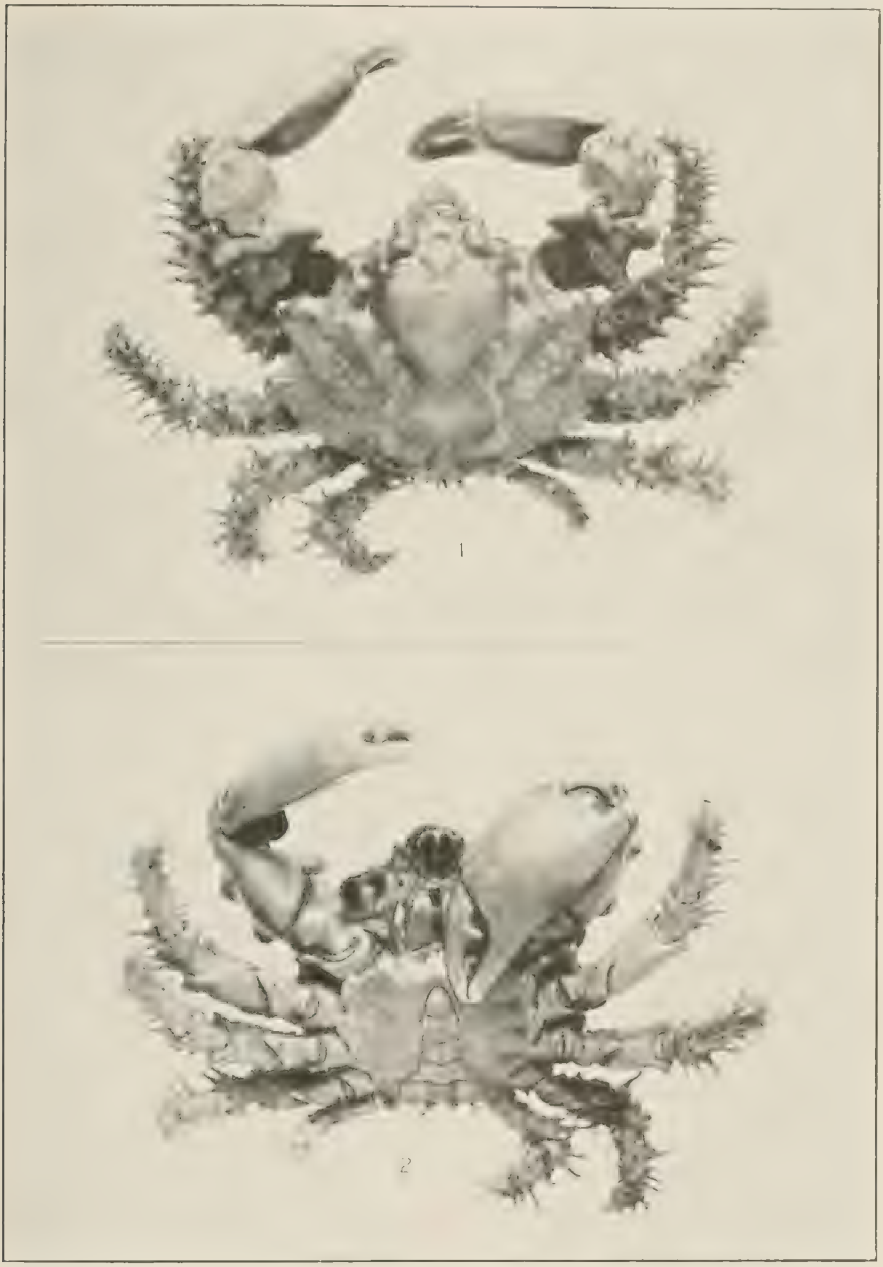
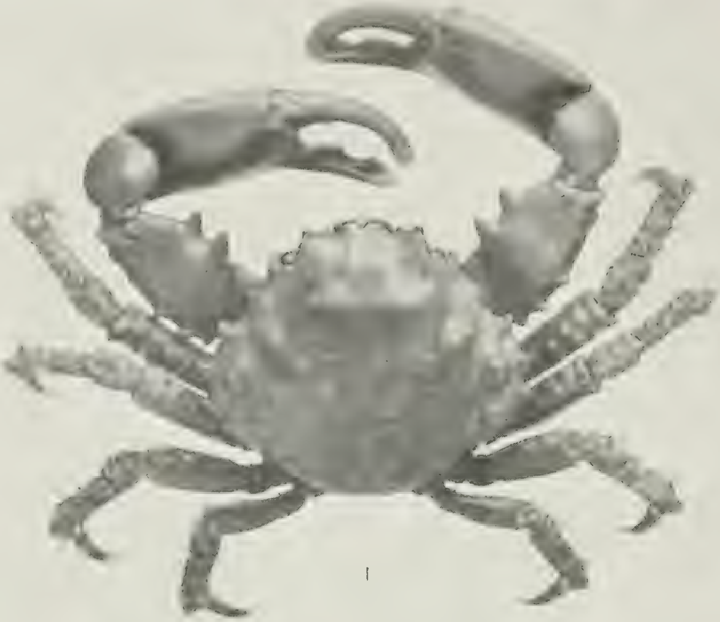
1. Mithrax (Mithraculus) areolatus. (Page 433.) 2, 3. Mithrax (Mithraculus) denticulatus. (Page 428)

For explanation of plate see page 579



MITHRAX (MITHRACULUS) NODOSUS. (PAGE 429)

FOR EXPLANATION OF PLATE SEE PAGE 579



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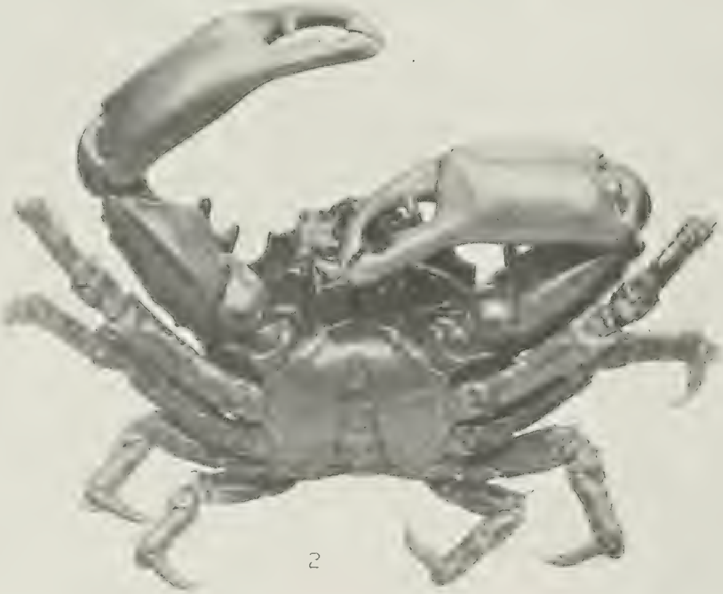
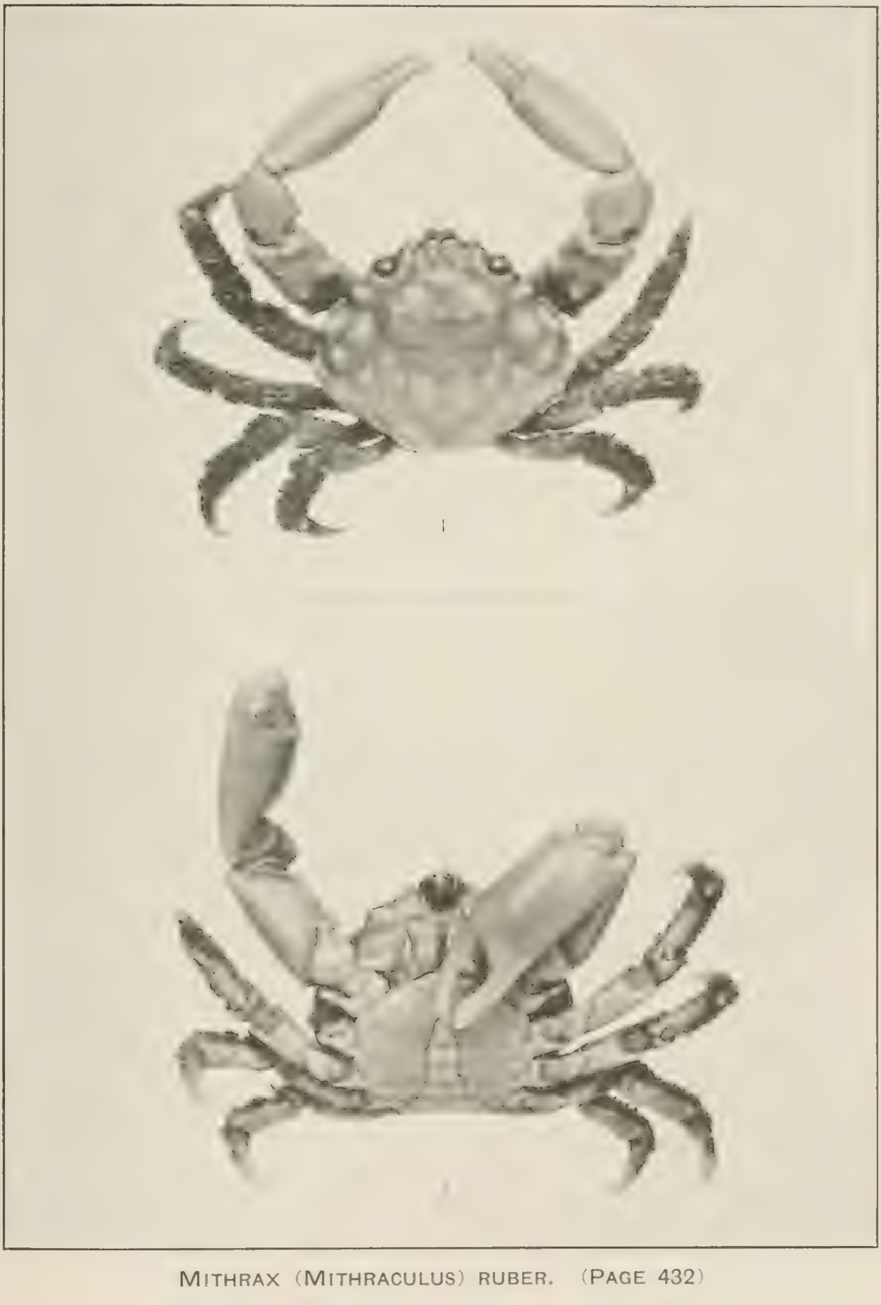


2

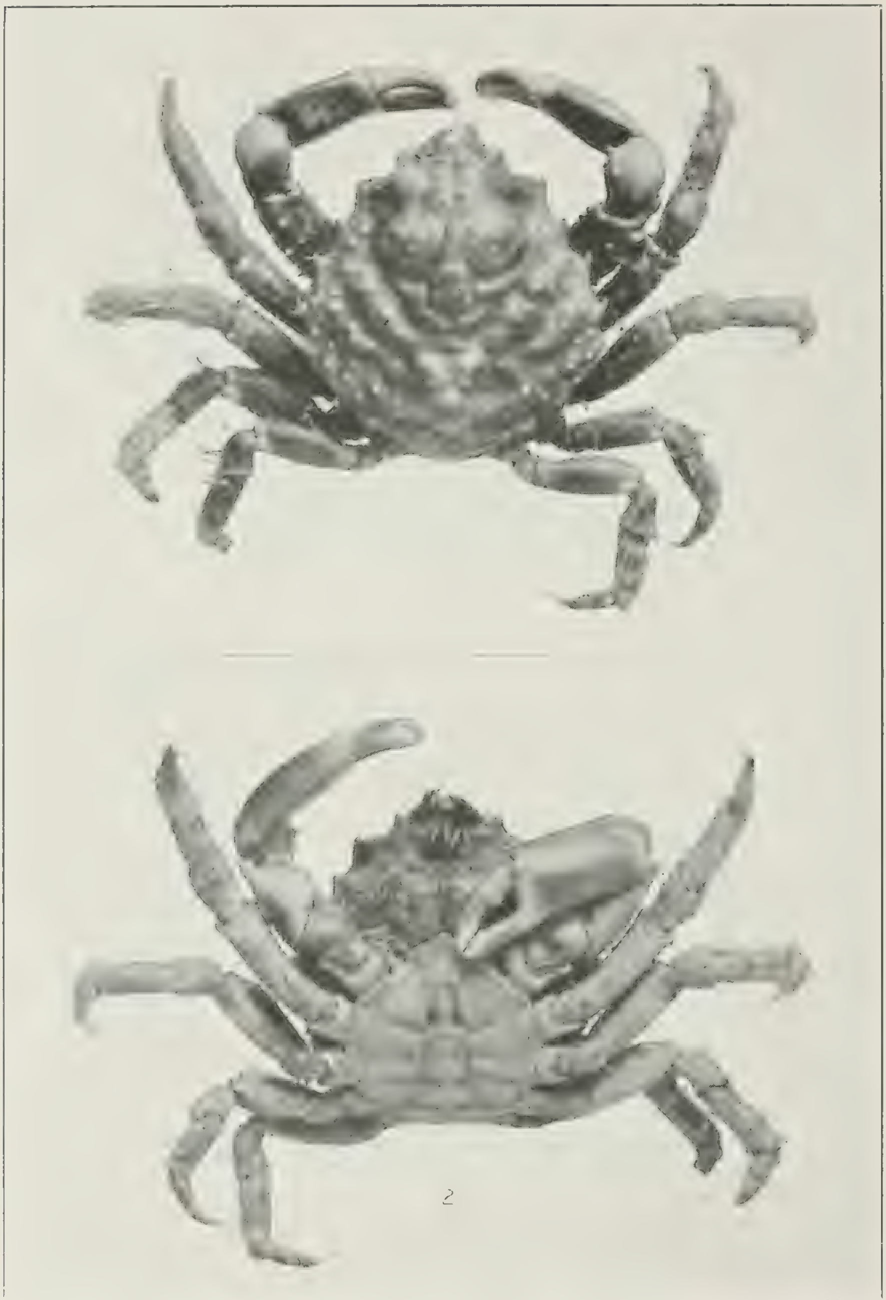
MITHRAX (MITHRACULUS) FORCEPS. (PAGE 431)

FOR EXPLANATION OF PLATE SEE PAGE 579



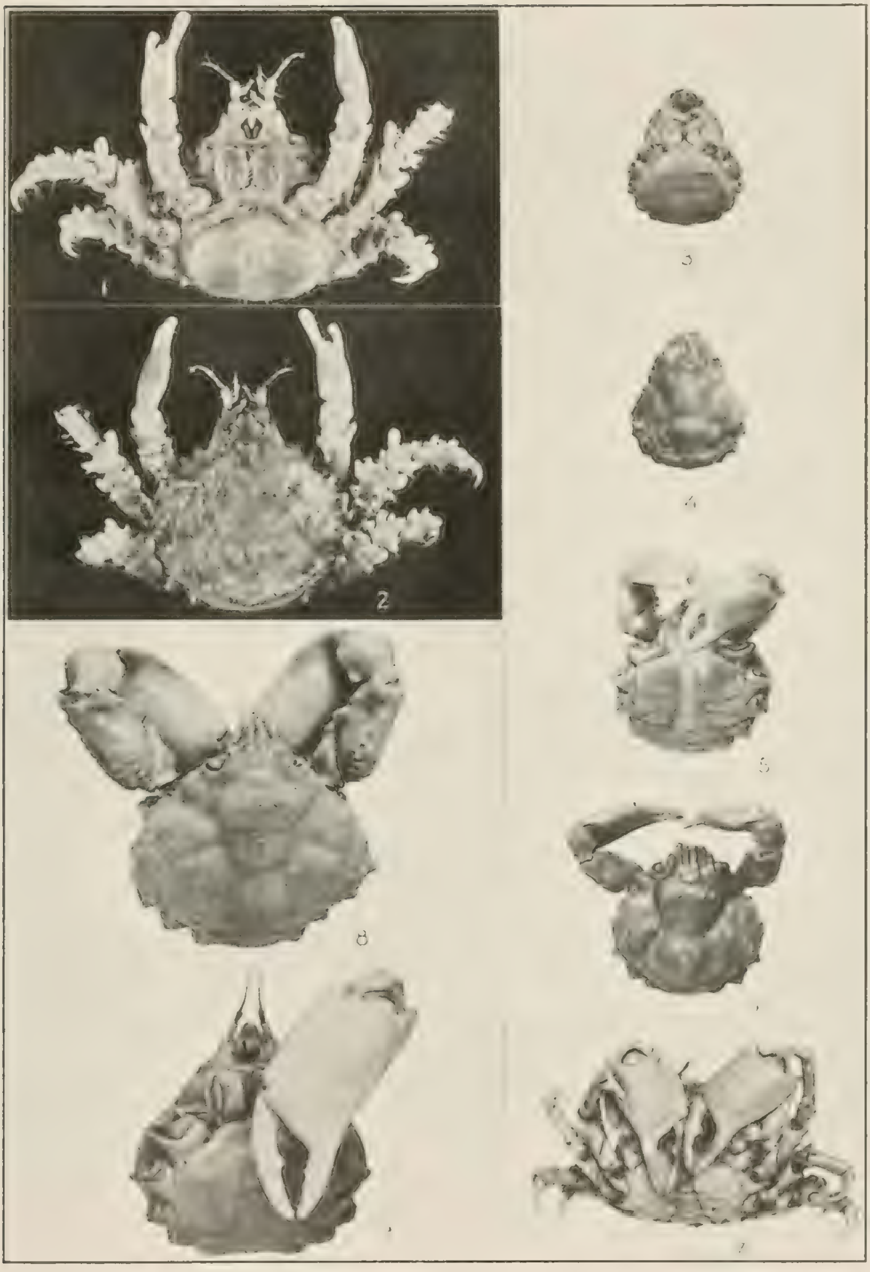
MITHRAX (MITHRACULUS) RUBER. (PAGE 432)

FOR EXPLANATION OF PLATE SEE PAGE 579



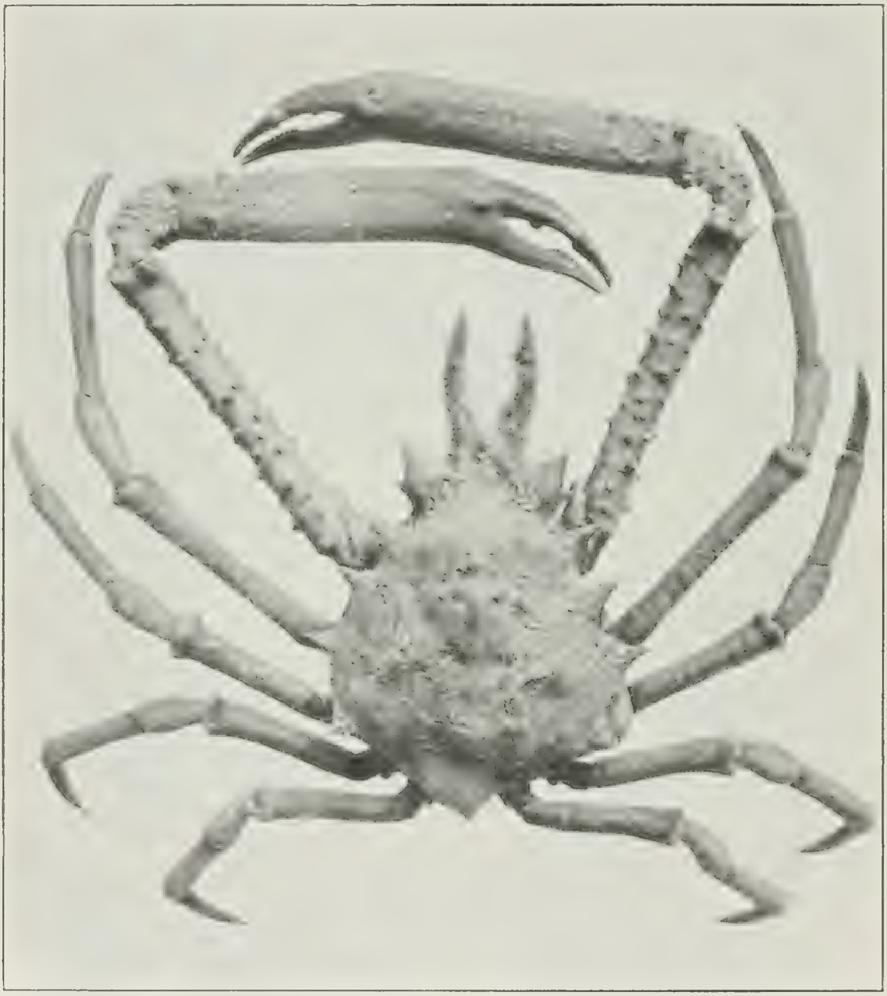
MITHRAX (MITHRACULUS) CINCTIMANUS. (PAGE 438)

FOR EXPLANATION OF PLATE SEE PAGE 579



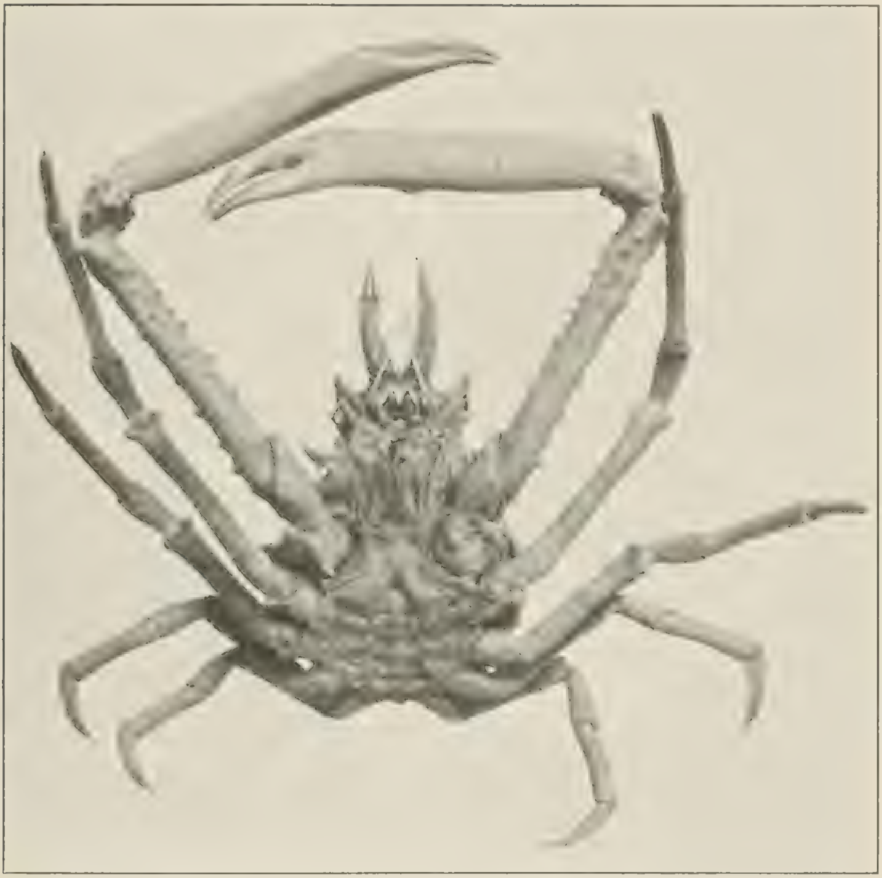
1, 2, 7. Teleophrys cristulipes. (Page 441.) 3, 4. T. ornatus. (Page 444.) 5, 6. T. pococki. (Page 443.) 8, 9. T. tumidus. (Page 442)

For explanation of plate see page 580



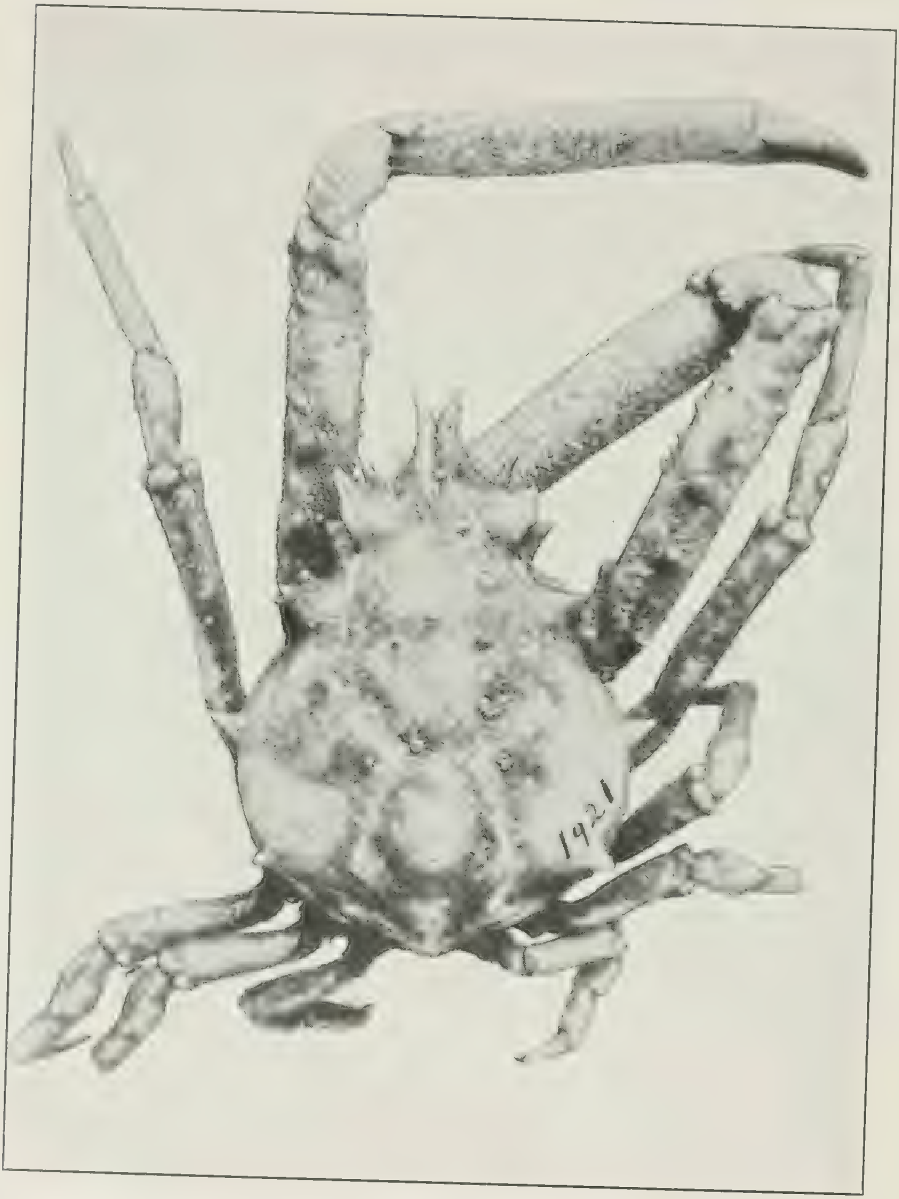
STENOCIONOPS FURCATA. (PAGE 449)

FOR EXPLANATION OF PLATE SEE PAGE 580



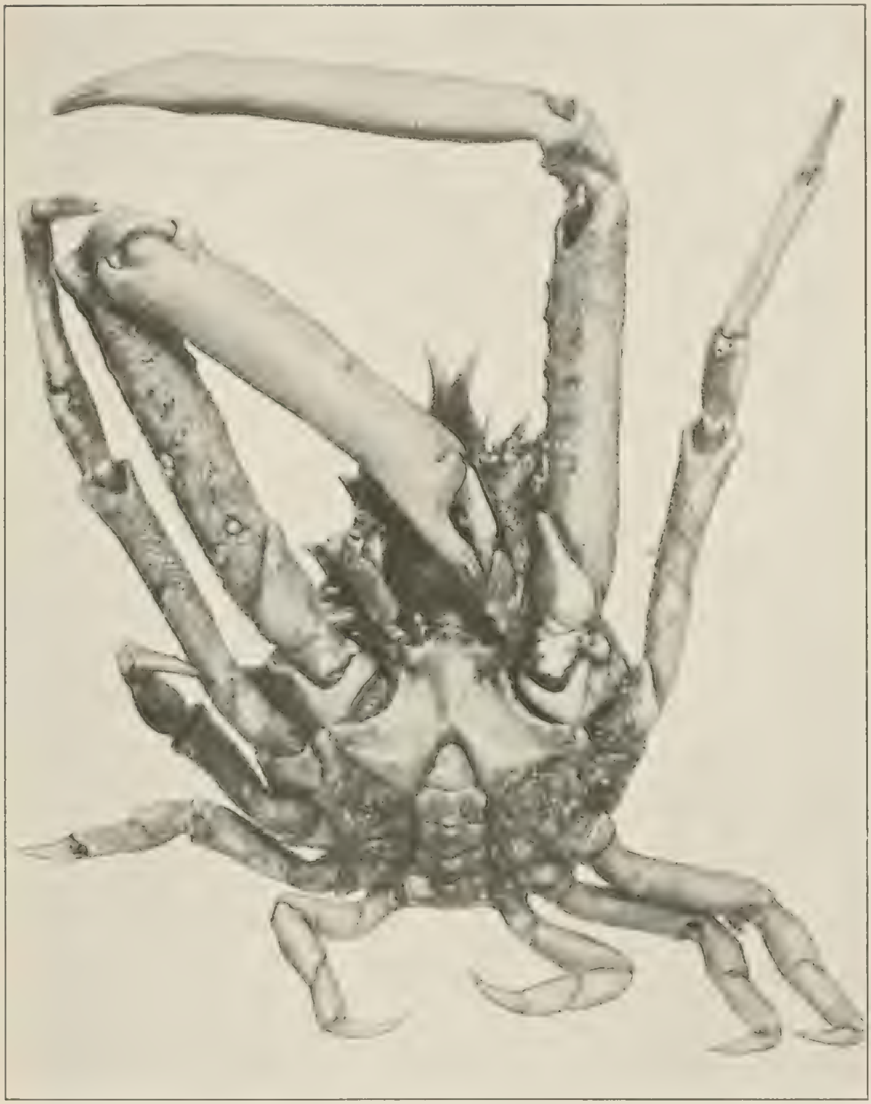
Stenocionops furcata. (Page 449)

For explanation of plate see page 580



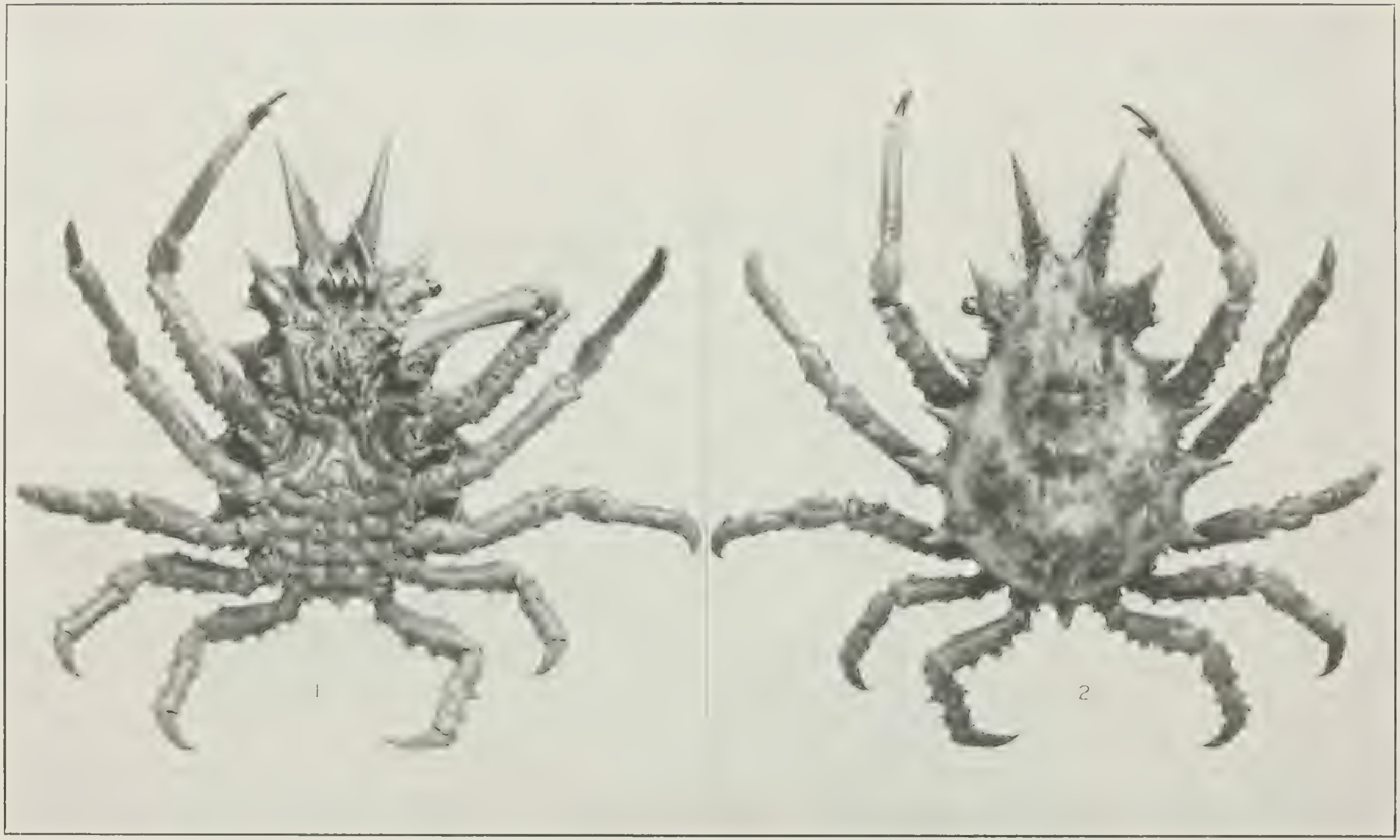
STENOCIONOPS CONTIGUA. (PAGE 451)

FOR EXPLANATION OF PLATE SEE PAGE 580



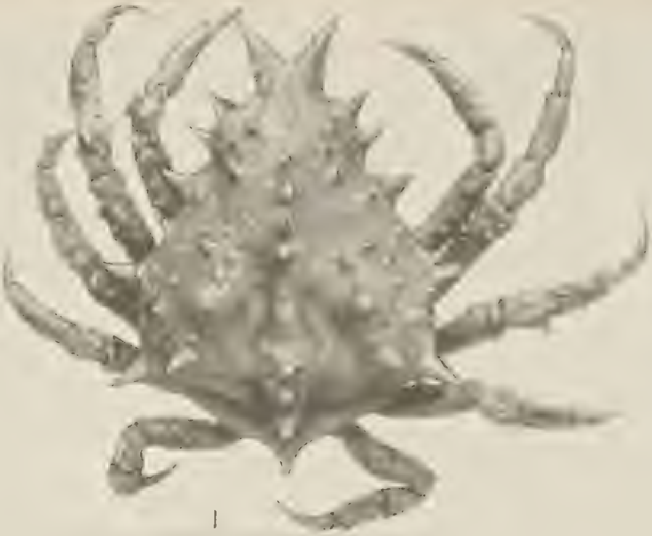
STENOCIONOPS CONTIGUA. (PAGE 451)

FOR EXPLANATION OF PLATE SEE PAGE 580



STENOCIONOPS FURCATA COELATA. (PAGE 450)

FOR EXPLANATION OF PLATE SEE PAGE 580



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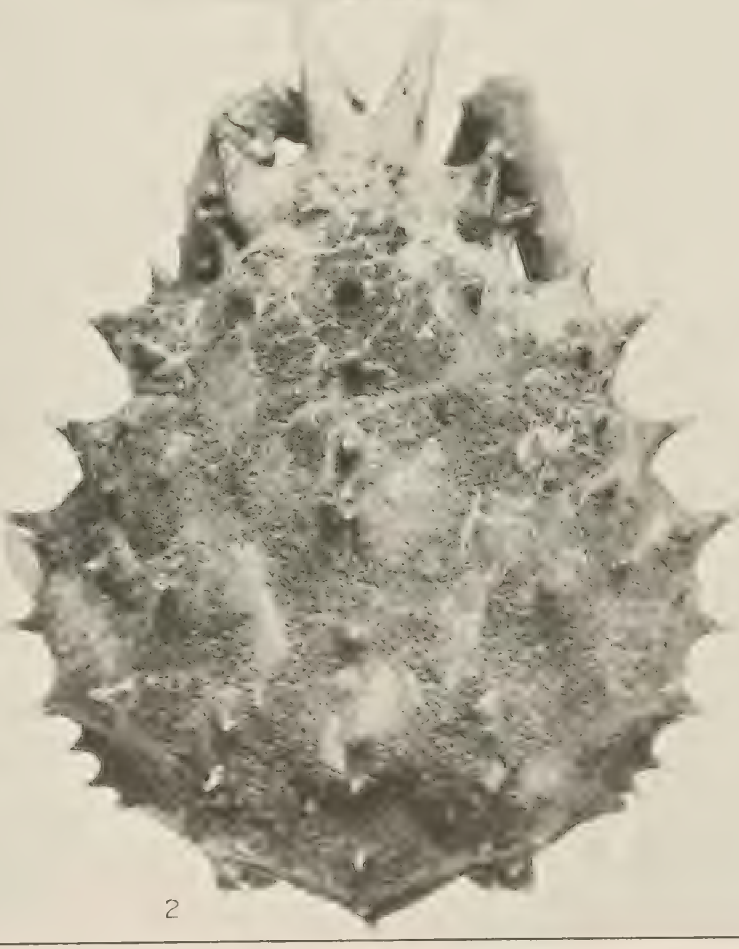

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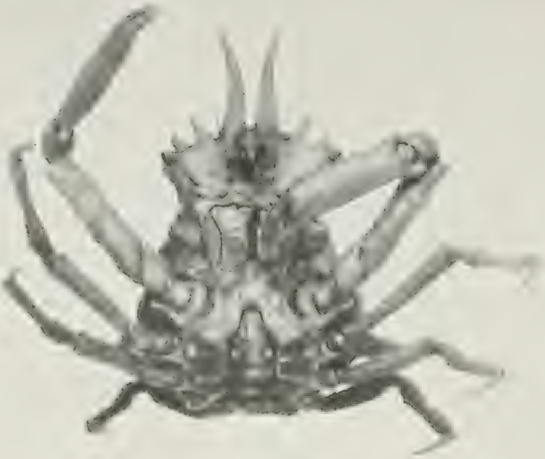
1. Stenocionops triangulata. (Page 461.) 2. S. spinosissima. (Page 455)

For explanation of plate see page 580



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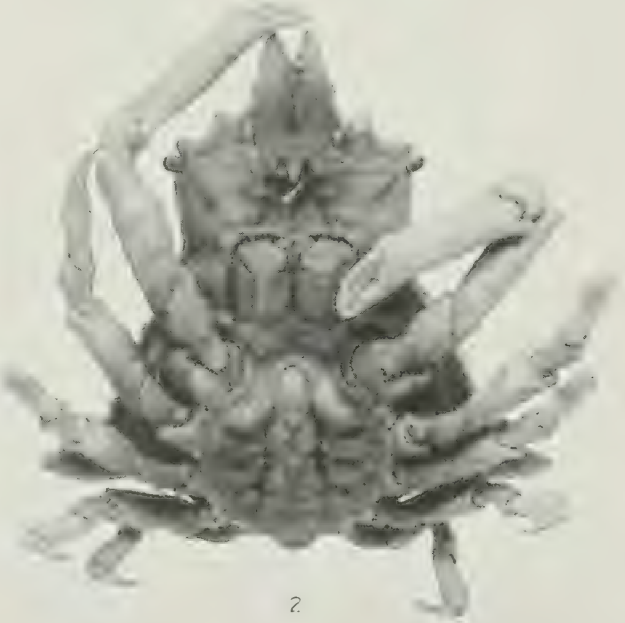
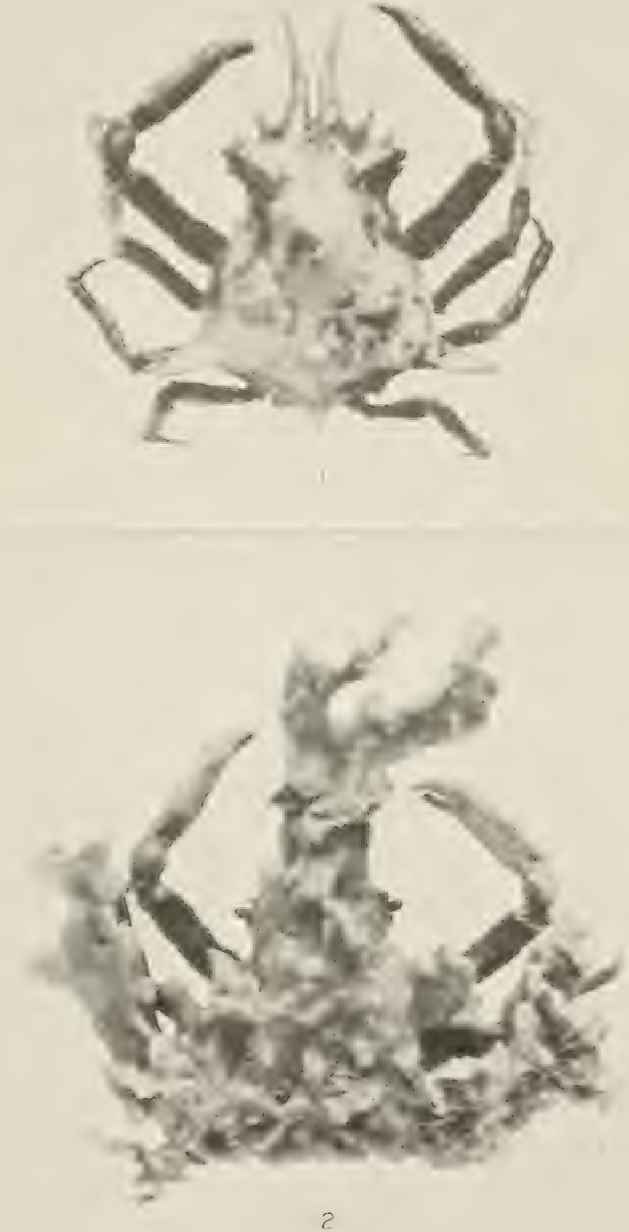


2

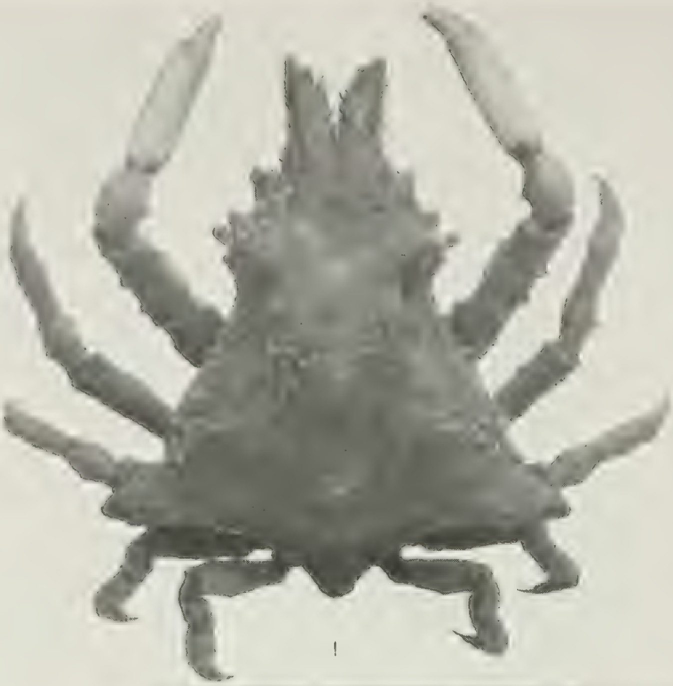
1. Macrocoeloma trispinosum. (Page 466.) 2. M. trispinosum nodipes. (Page 468)

For explanation of plate see page 580



Macrocoeloma trispinosum. (Page 466)

For explanation of plate see page 580



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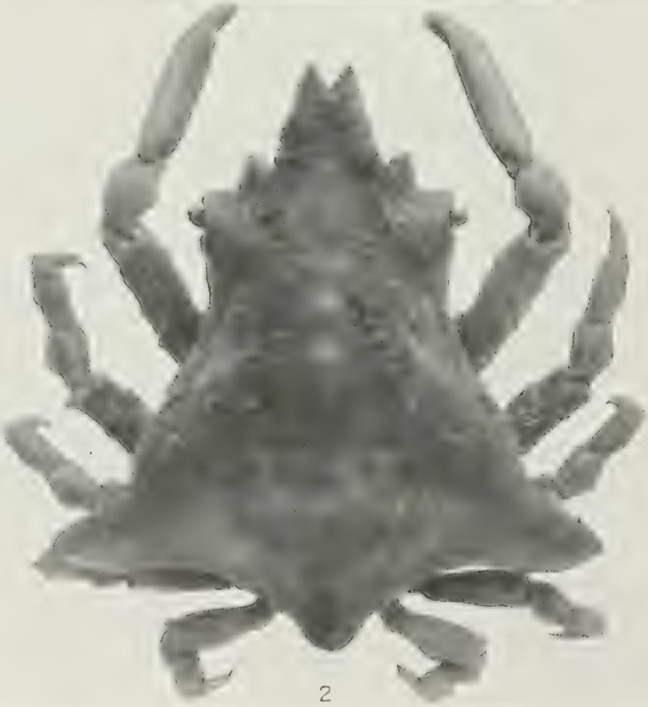
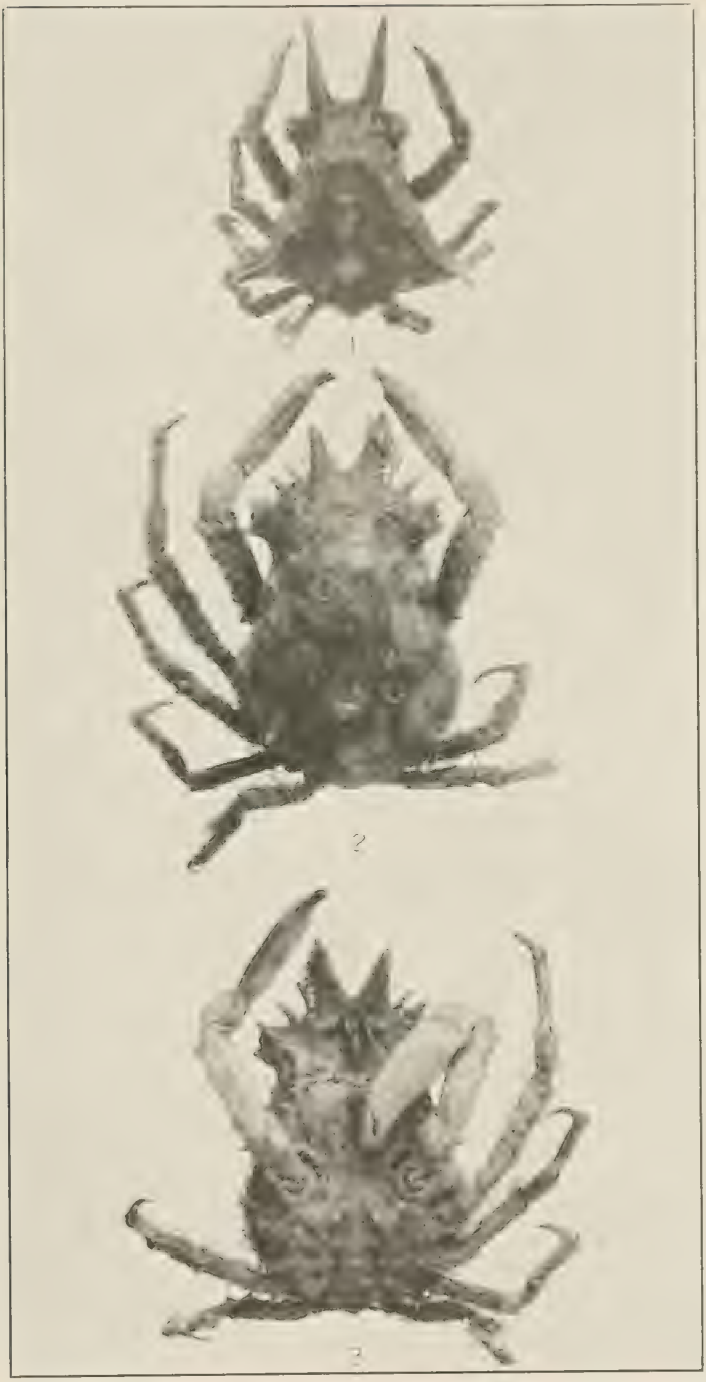


2

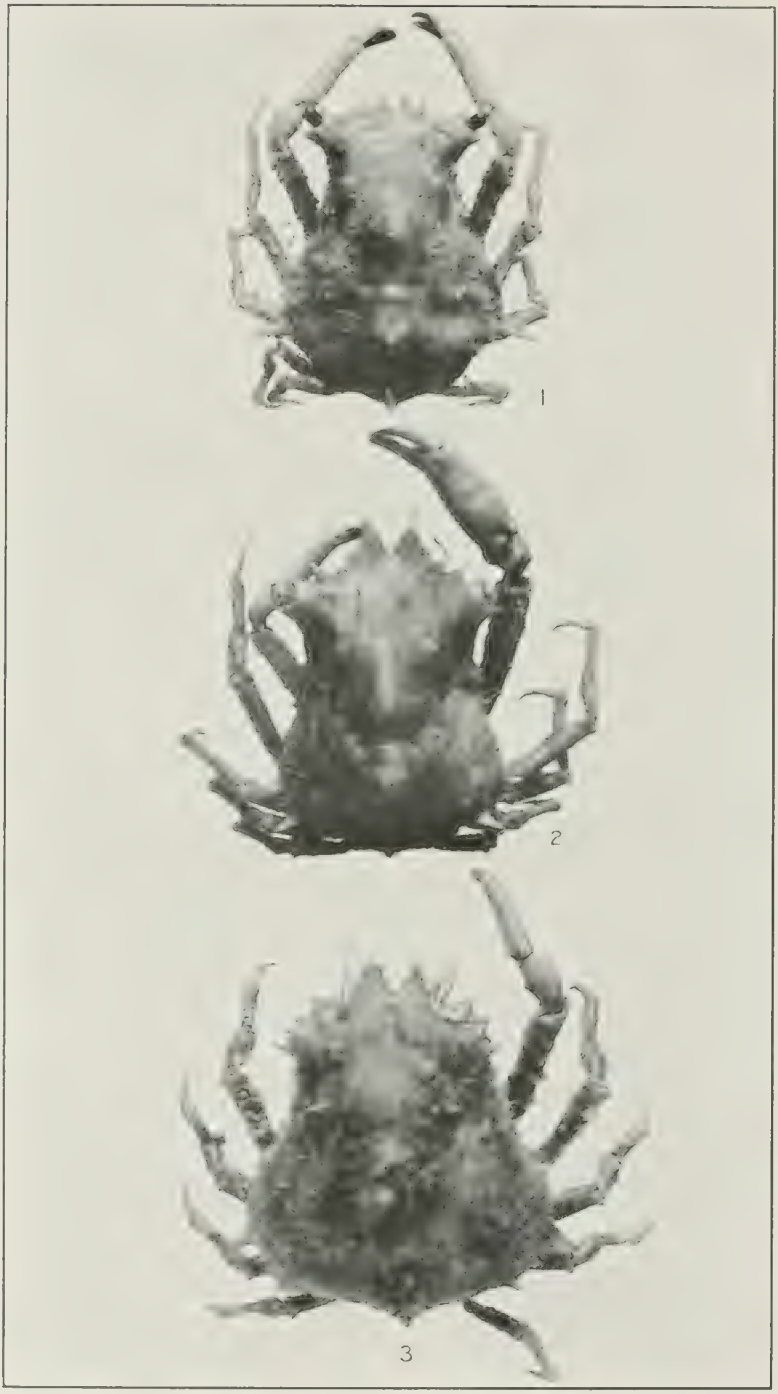
1. MACROCOELOMA TRISPINOSUM, VARIETY. (PAGE 468.) 2. M. TRISPINOSUM NODIPES. (PAGE 468)

FOR EXPLANATION OF PLATE SEE PAGE 581



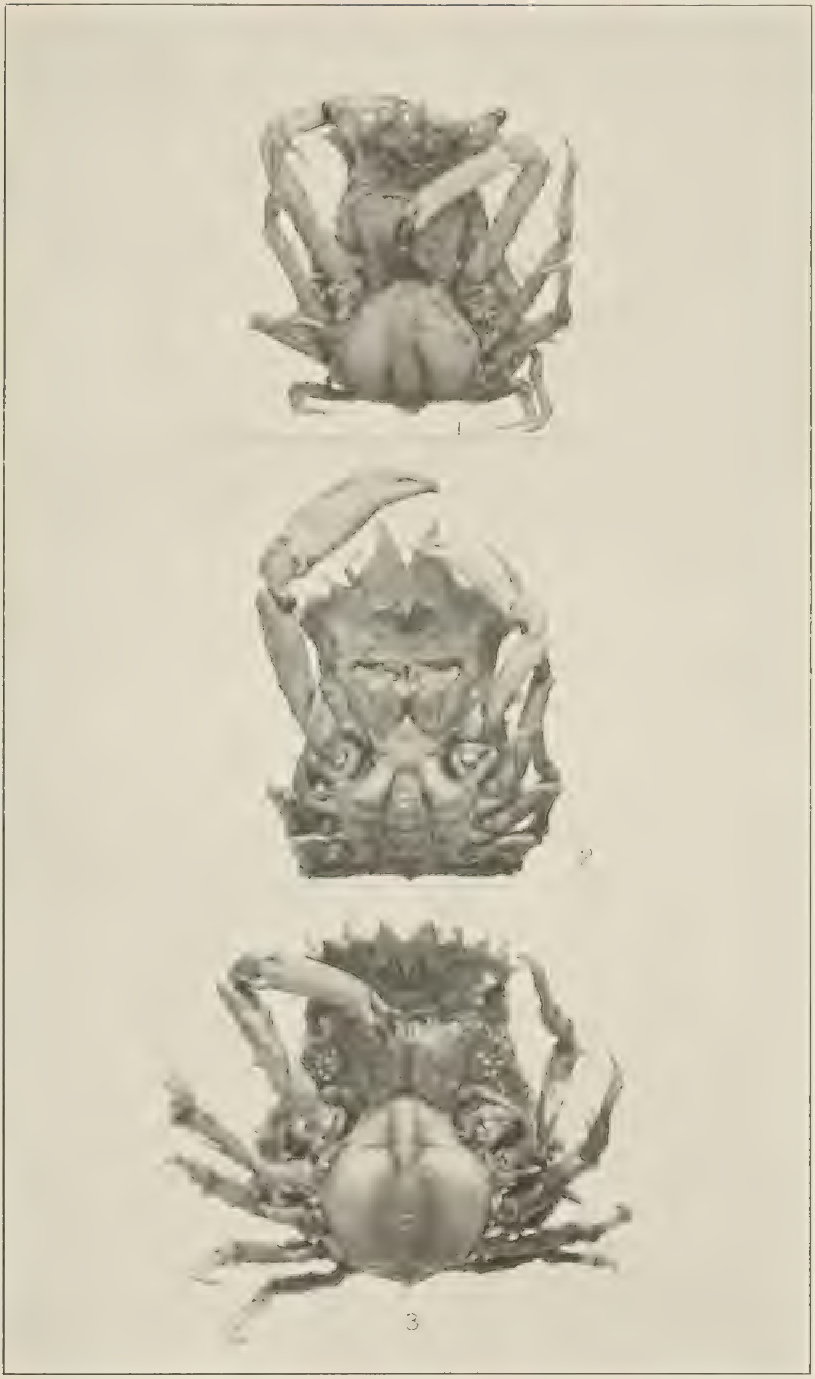
1. Macrocoeloma diplacanthum. (Page 478.) 2, 3. M. laevigatum. (Page 483)

For explanation of plate see page 581



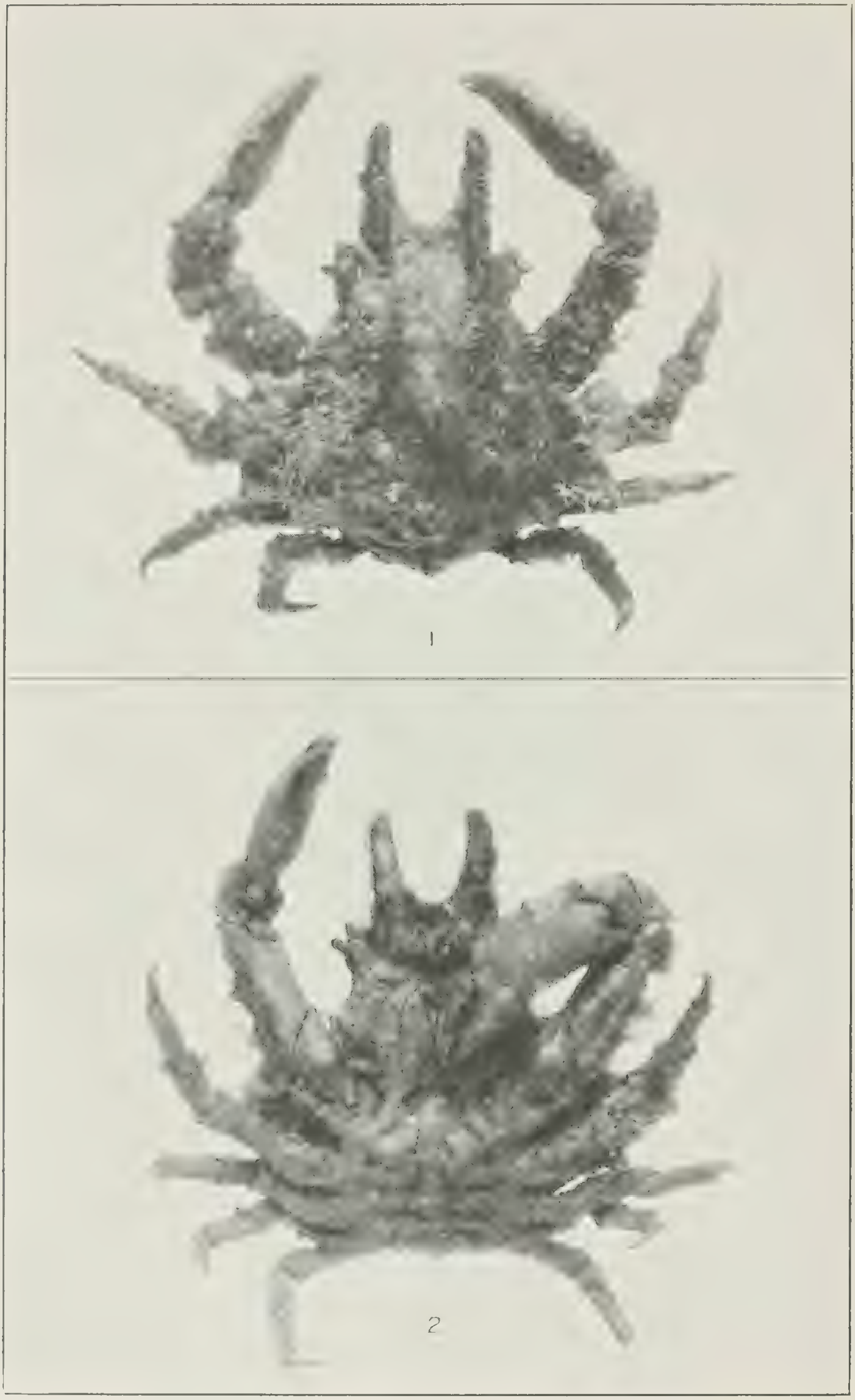
1. Macrocoeloma eutheca. (Page 484.) 2. M. intermedium. (Page 486.) 3. M. concavum. (Page 487)

For explanation of plate see page 581



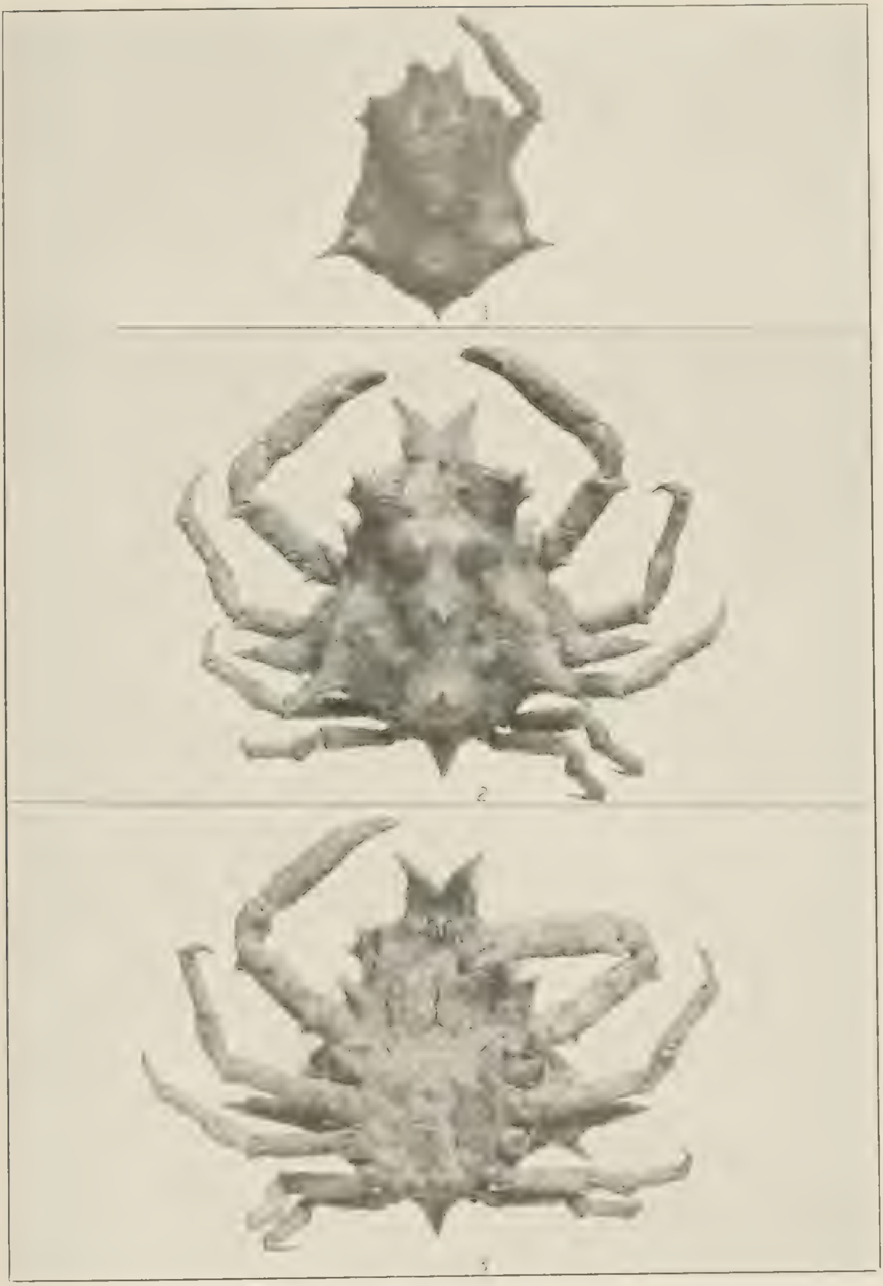
1. Macrocoeloma eutheca. (Page 484.) 2. M. intermedium. (Page 486.) 3. M. concavum. (Page 487)

For explanation of plate see page 581



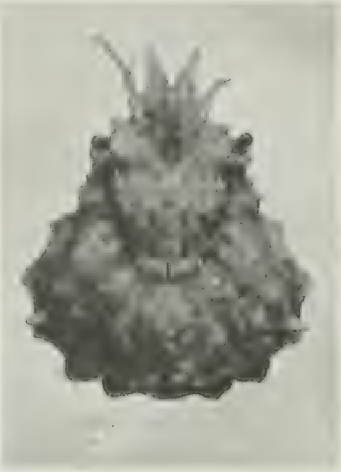
Macrocoeloma subparallelum. (Page 480)

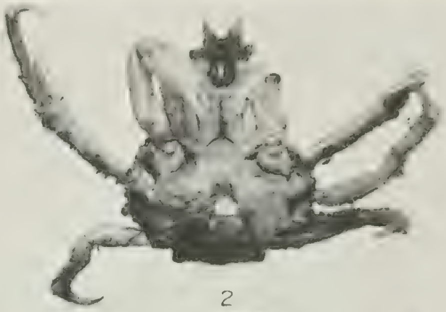
For explanation of plate see page 581



1. MACROCOELOMA HEPTACANTHUM. (PAGE 473.) 2, 3. M. SEPTEMSPINOSUM. (PAGE 477)

FOR EXPLANATION OF PLATE SEE PAGE 581





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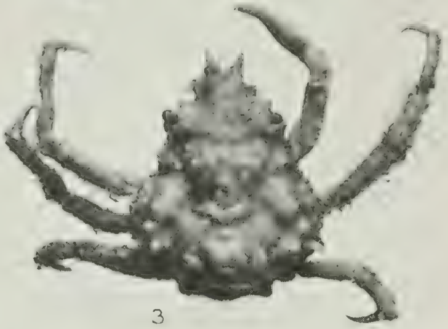

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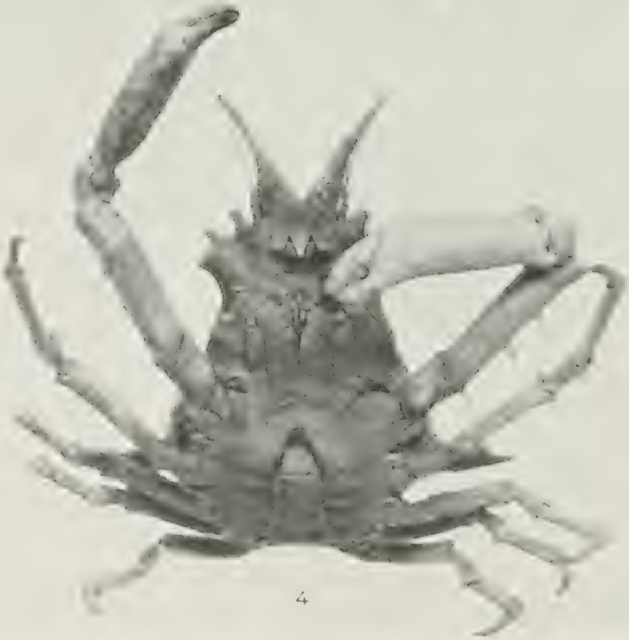
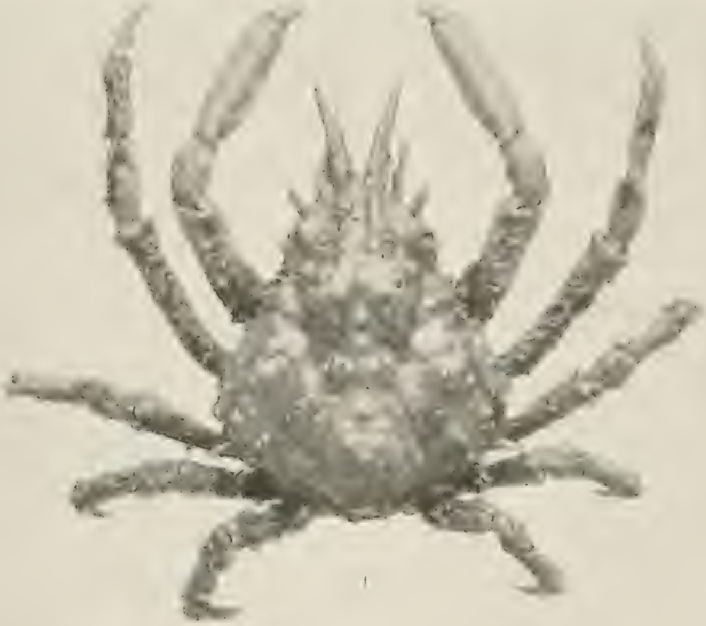


4

1–3. Microphrys interruptus. (Page 504.) 4. Macrocoeloma camptocerum. (Page 469)

For explanation of plate see page 581



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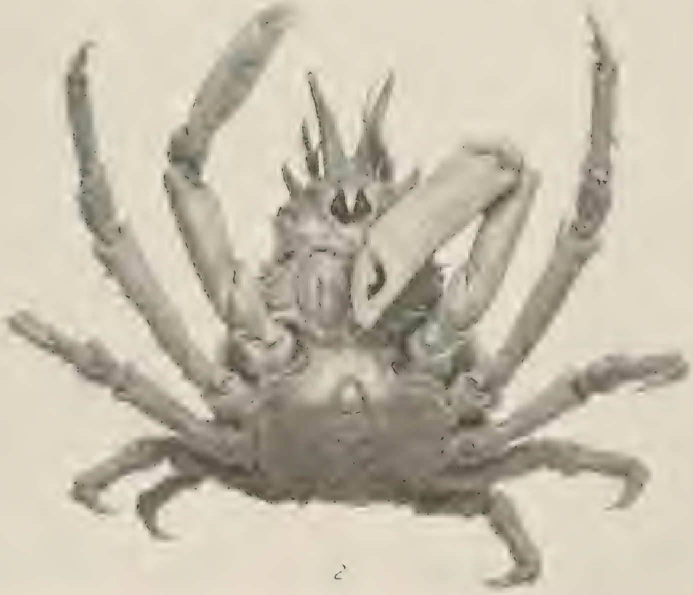
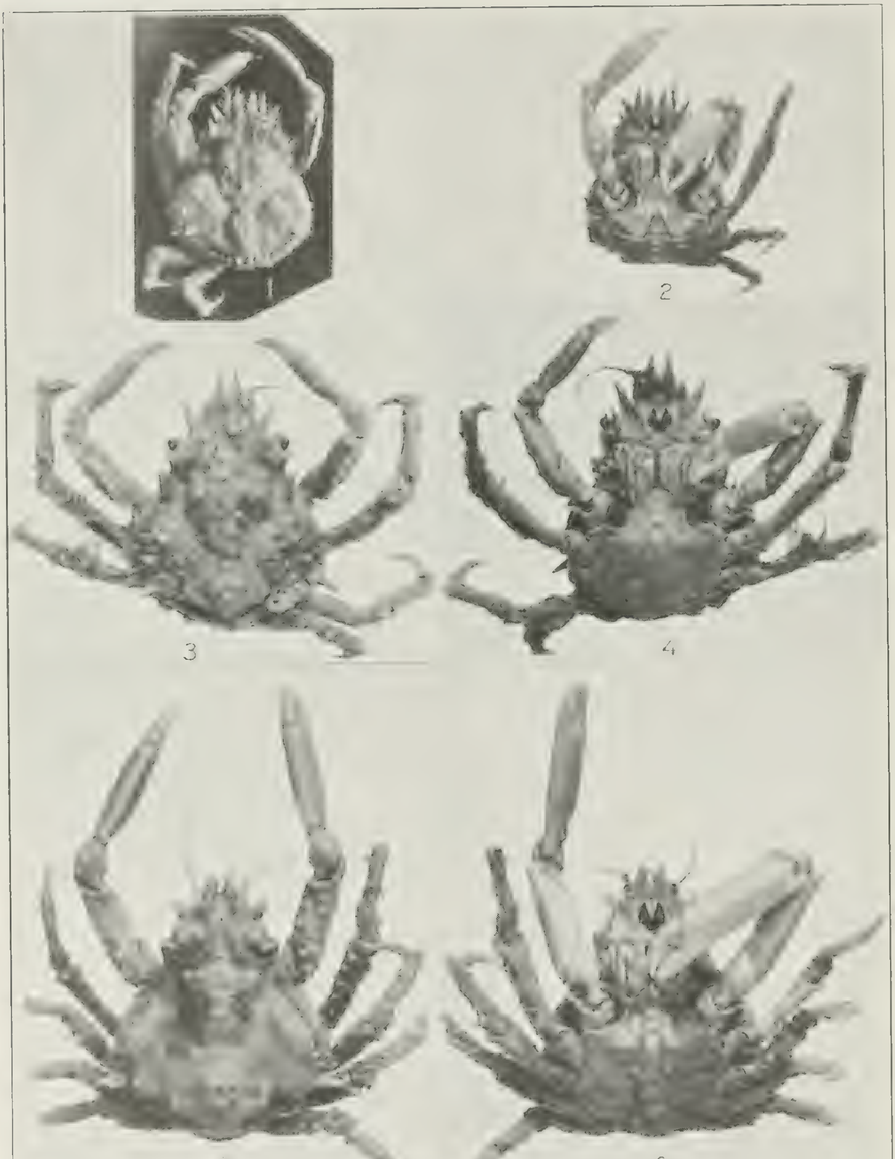


2

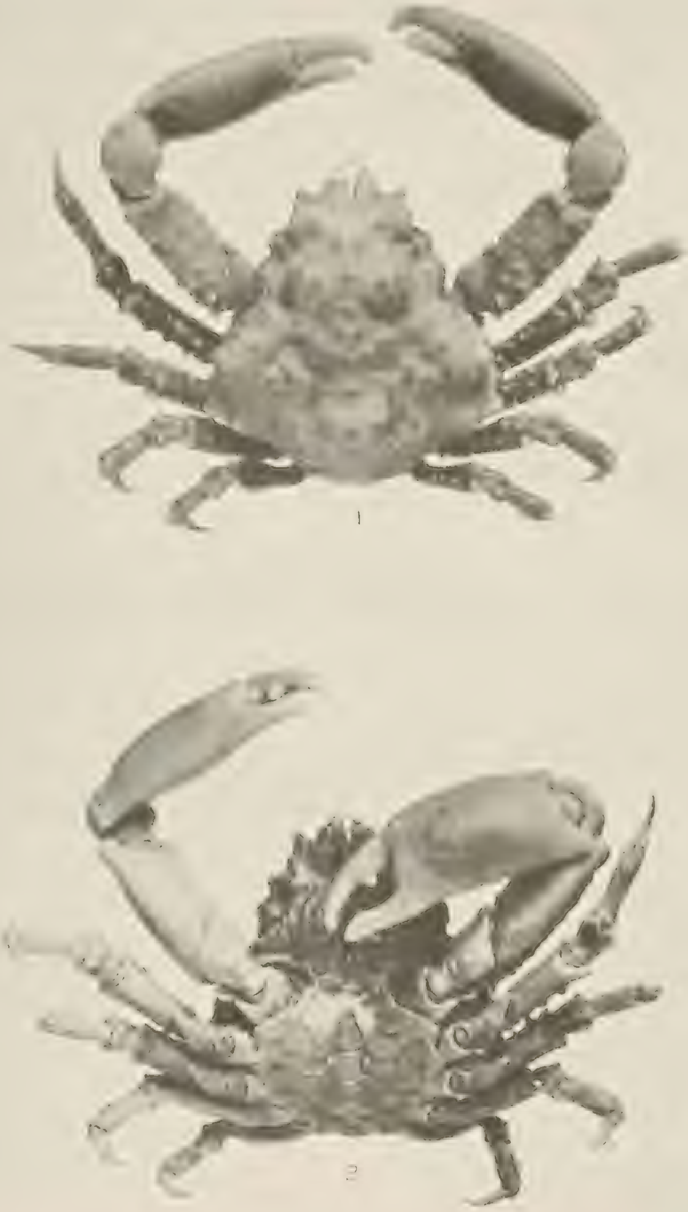
MICROPHRYS BICORNUTUS. (PAGE 489)

FOR EXPLANATION OF PLATE SEE PAGE 581



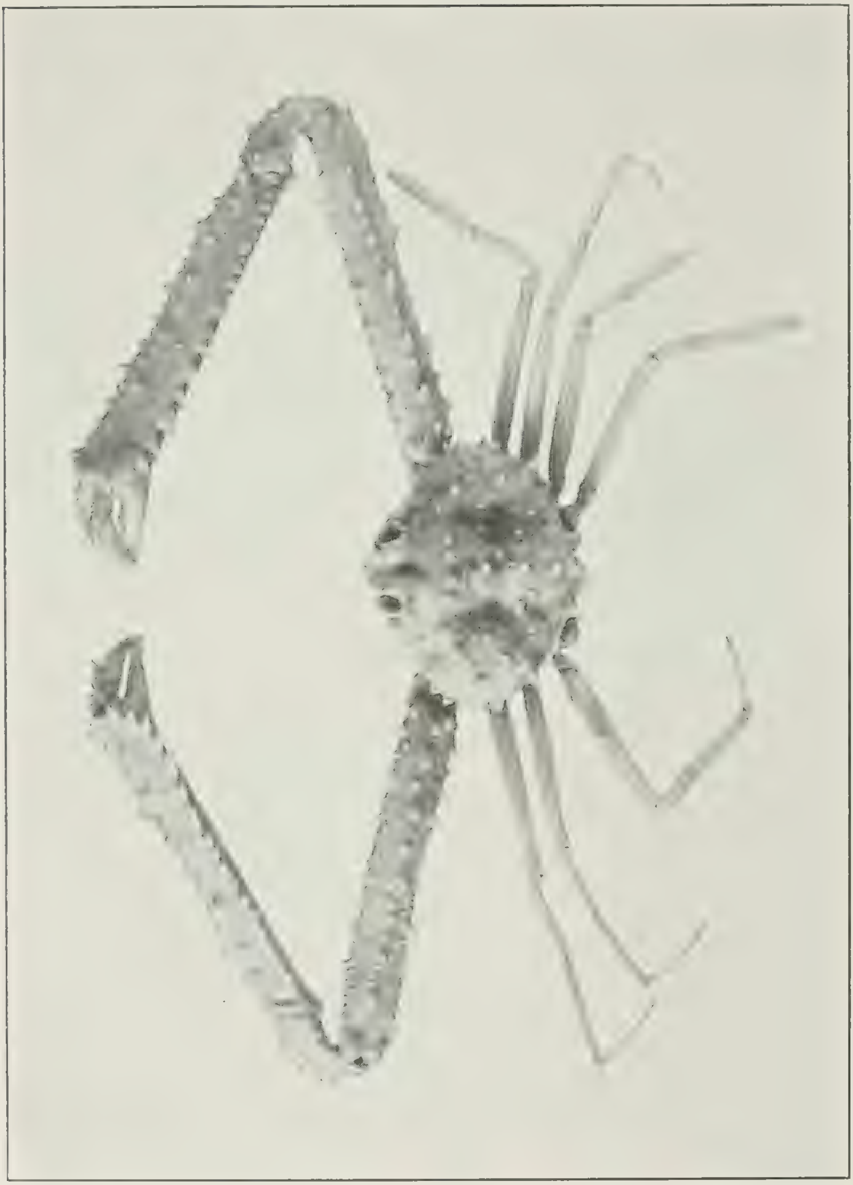
1, 2. Microphrys platysoma. (Page 497.) 3, 4. M. antillensis. (Page 498.) 5, 6. M. branchialis. (Page 502)

For explanation of plate see page 582



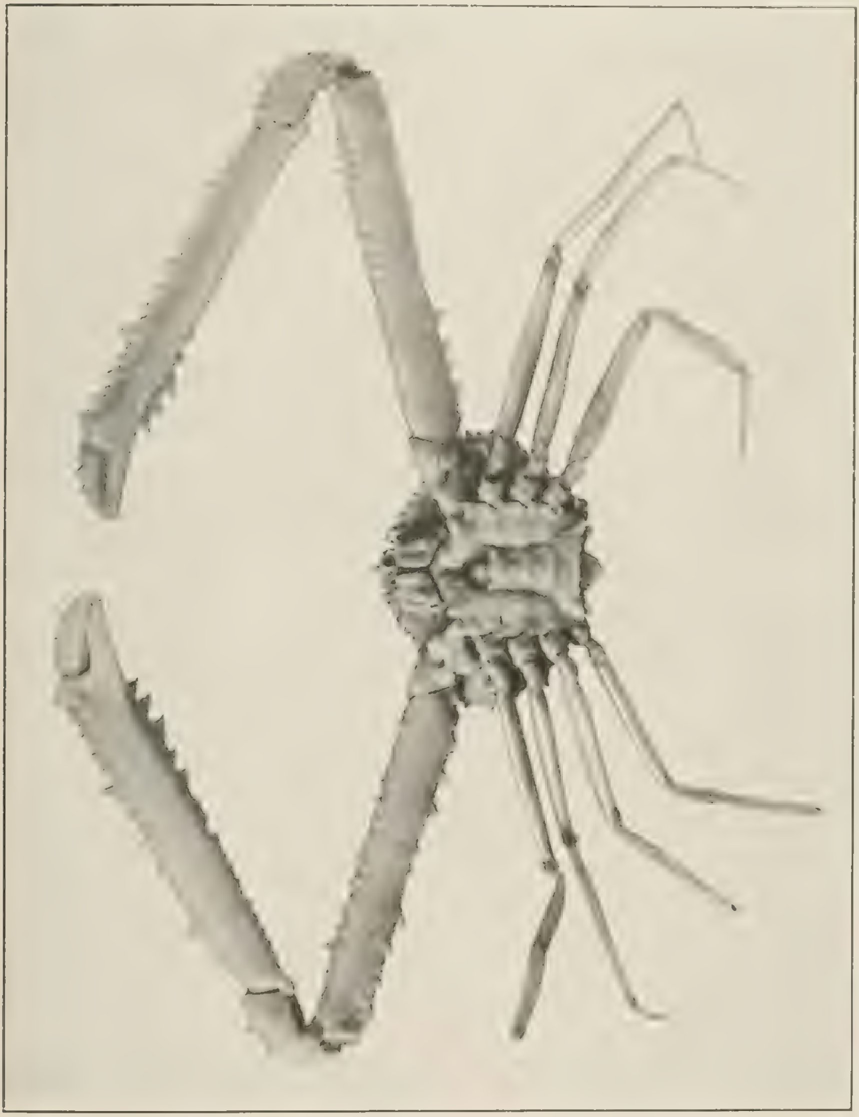
MICROPHRYS TRIANGULATUS. (PAGE 505)

FOR EXPLANATION OF PLATE SEE PAGE 582



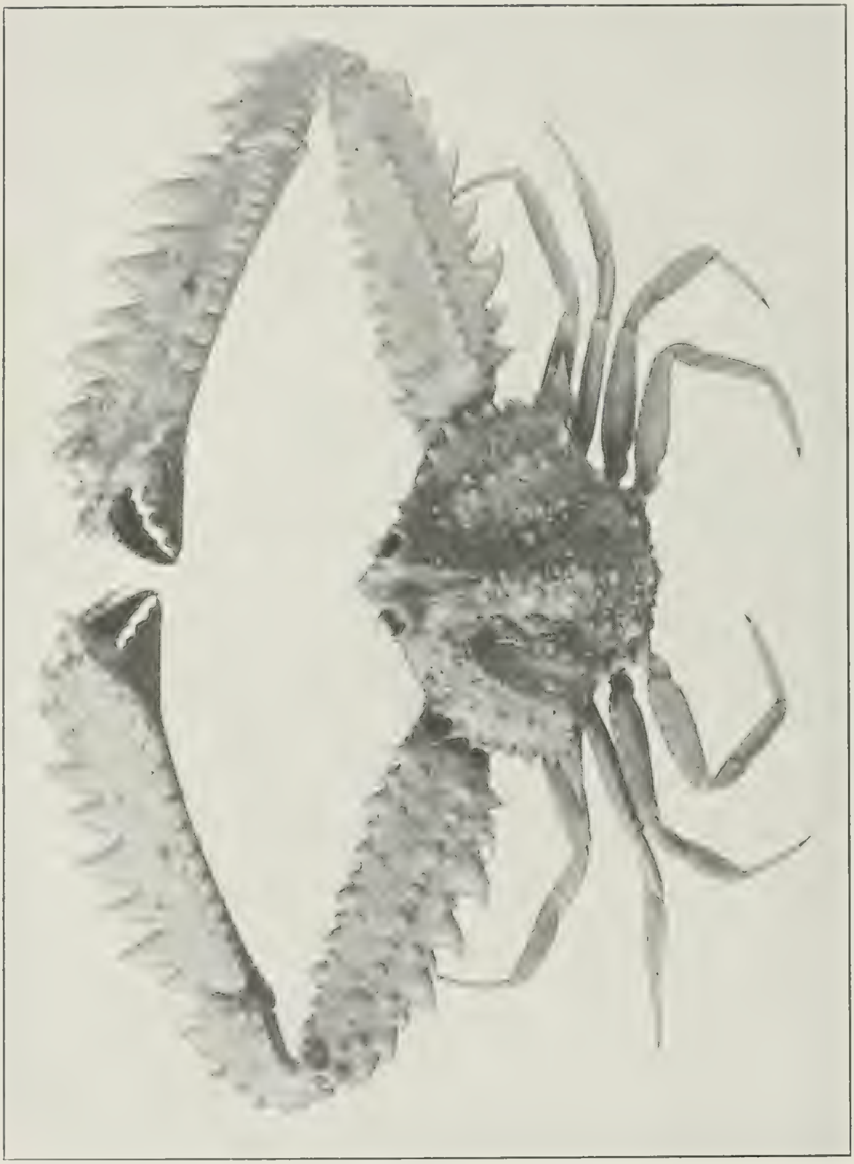
Parthenope agonus. (Page 513)

For explanation of plate see page 582



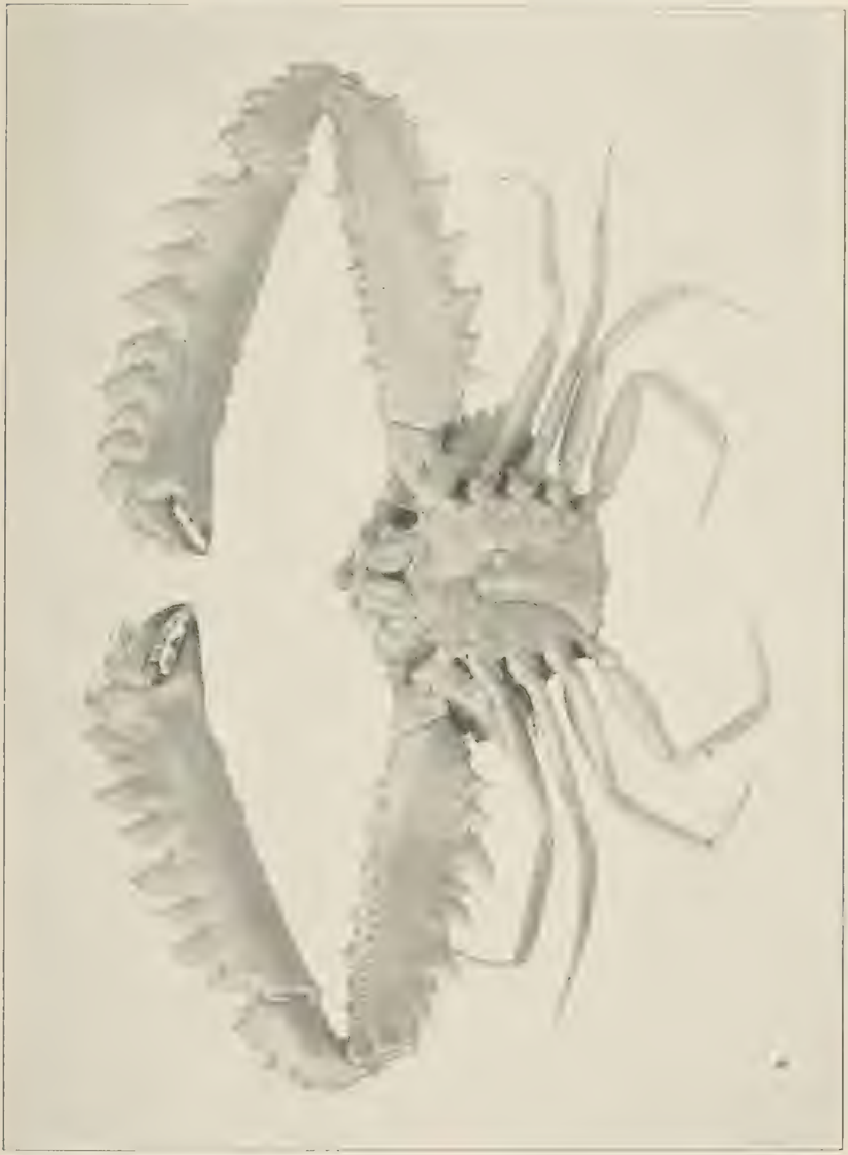
PARTHENOPE AGONUS. (PAGE 513)

FOR EXPLANATION OF PLATE SEE PAGE 582



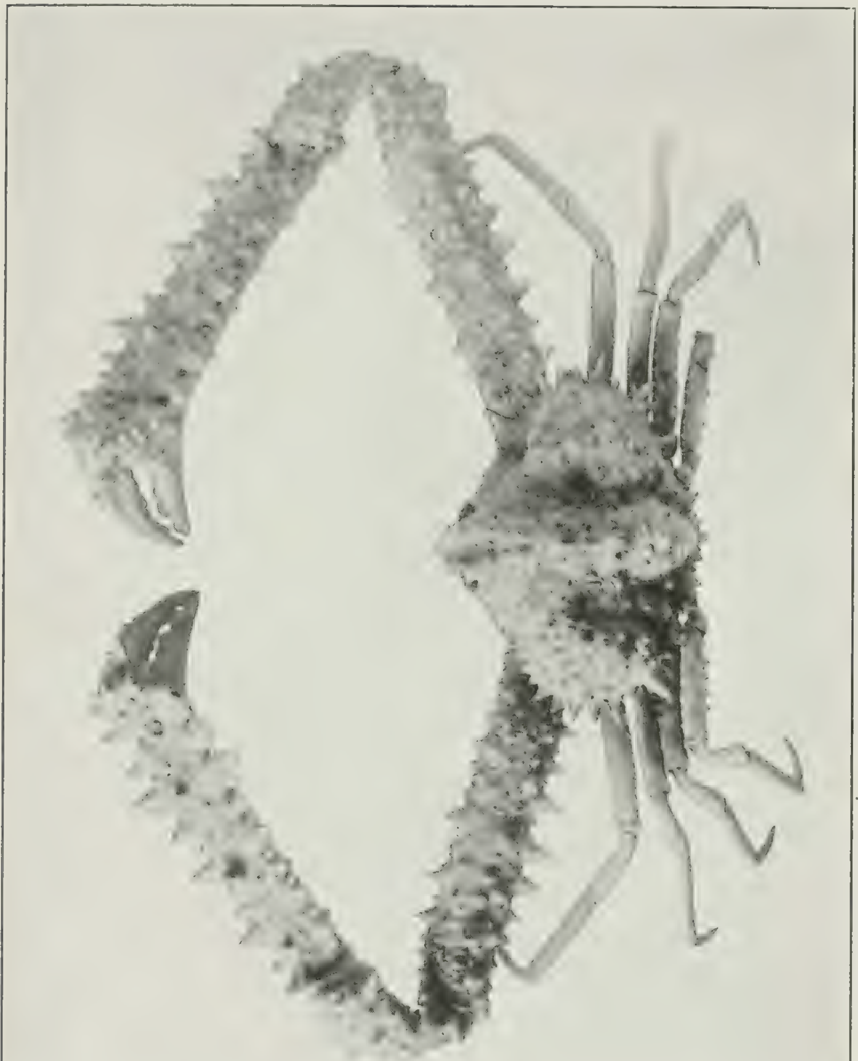
PARTHENOPE (PLATYLAMBRUS) SERRATA. (PAGE 516)

FOR EXPLANATION OF PLATE SEE PAGE 582



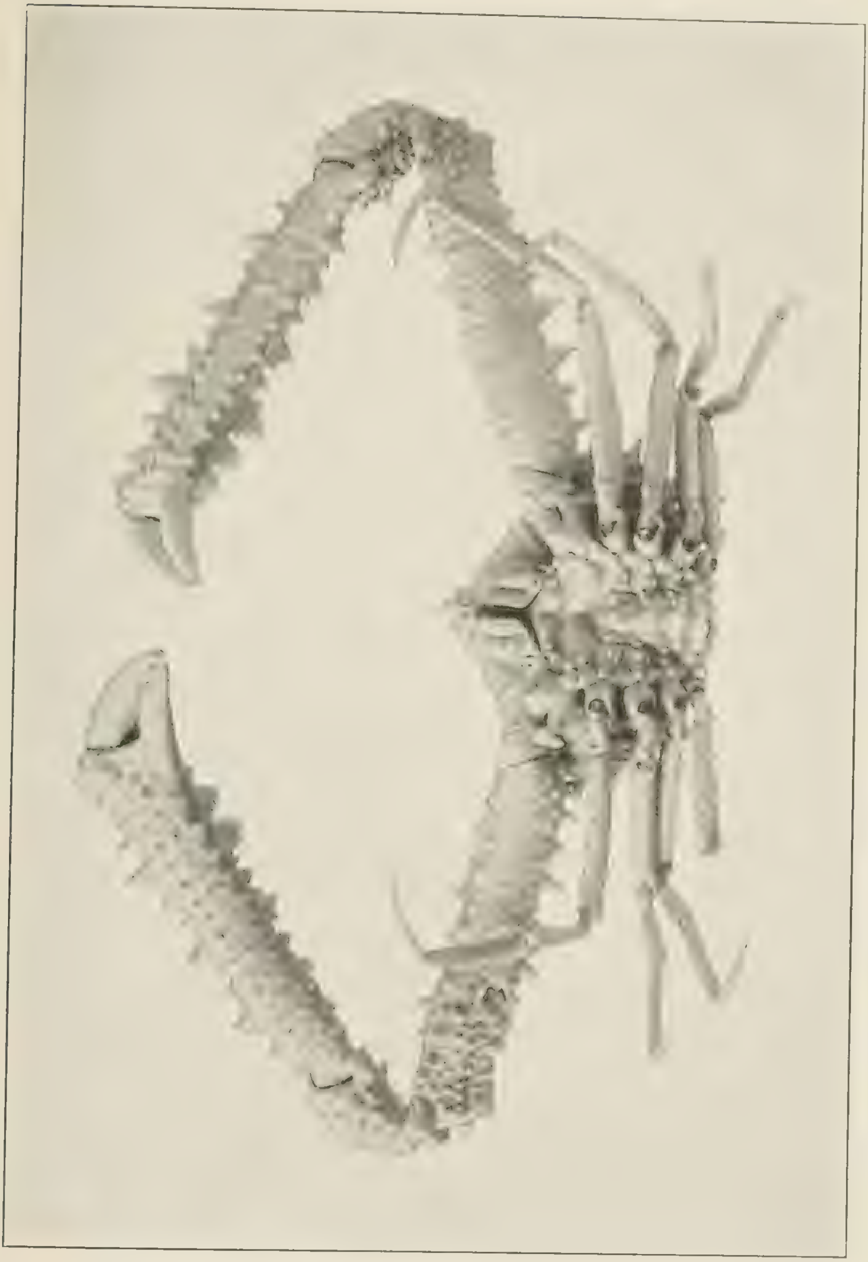
Parthenope (Platylambrus) serrata. (Page 516)

For explanation of plate see page 582



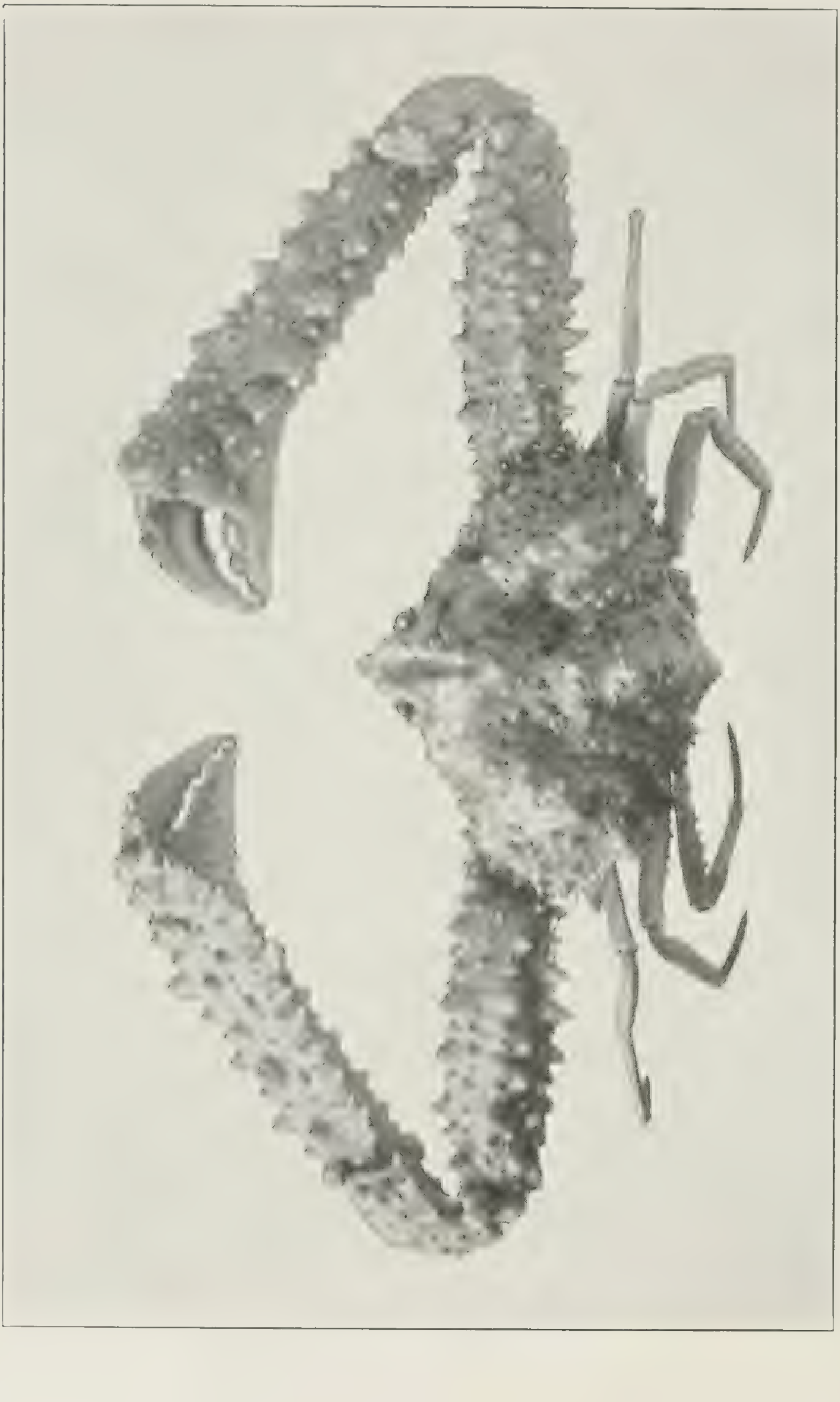
PARTHENOPE (PLATYLAMBRUS) POURTALESII. (PAGE 521)

FOR EXPLANATION OF PLATE SEE PAGE 582



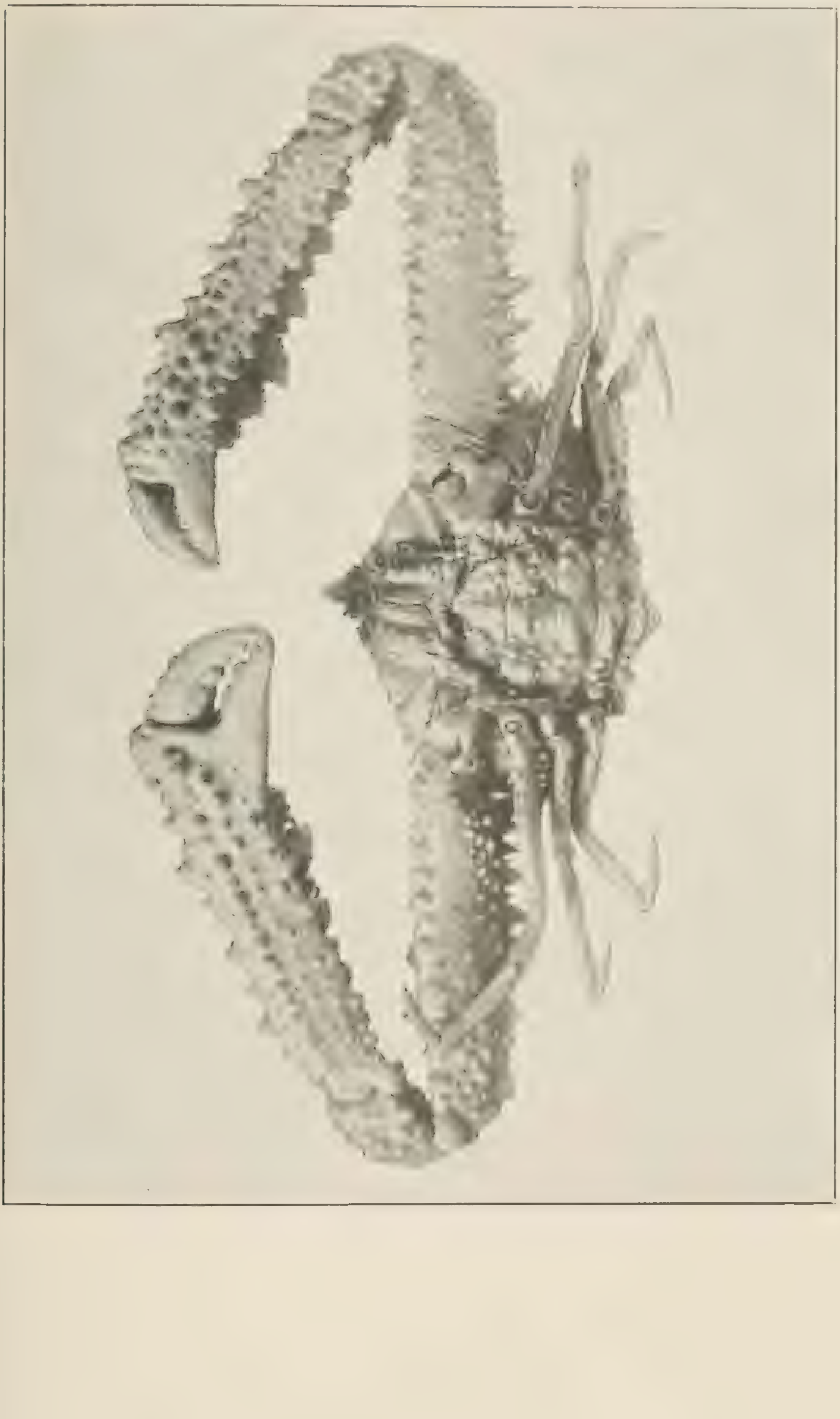
PARTHENOPE PLATYLAMBRUS POURTALESII. PAGE 521

FOR EXPLANATION OF PLATE SEE PAGE 582



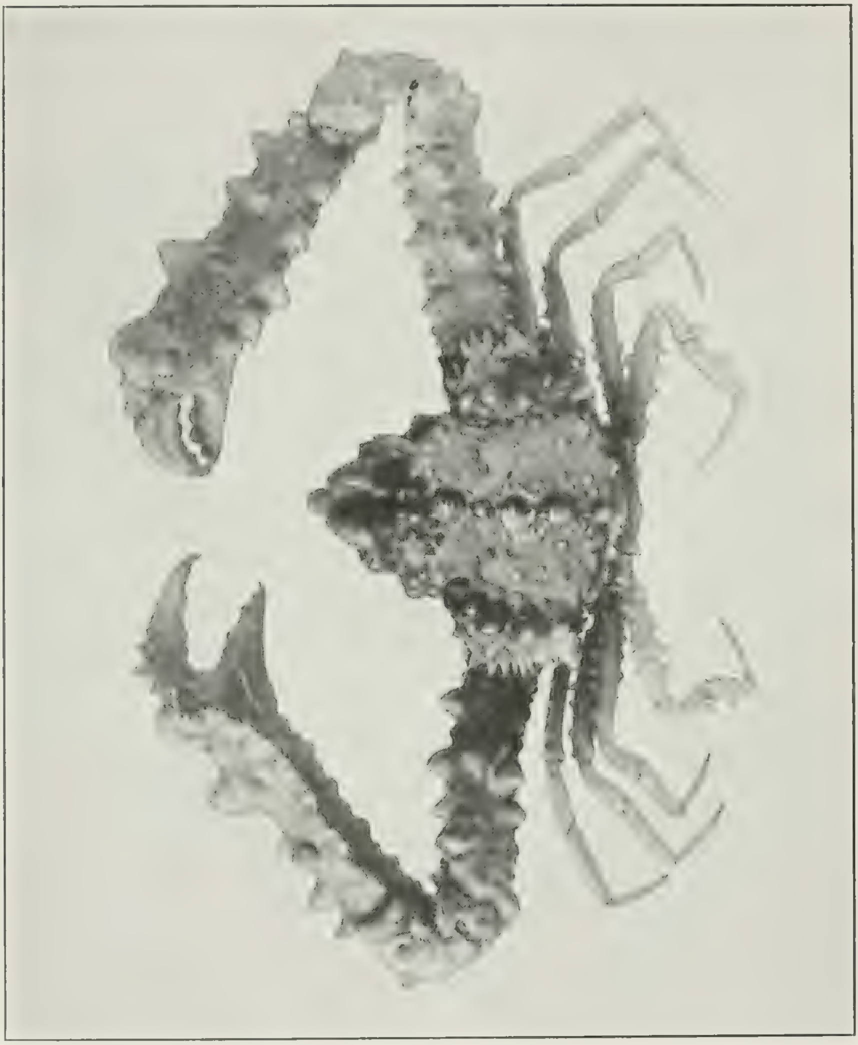
PARTHENOPE (PLATYLAMBRUS) EXILIPES. (PAGE 523)

FOR EXPLANATION OF PLATE SEE PAGE 582



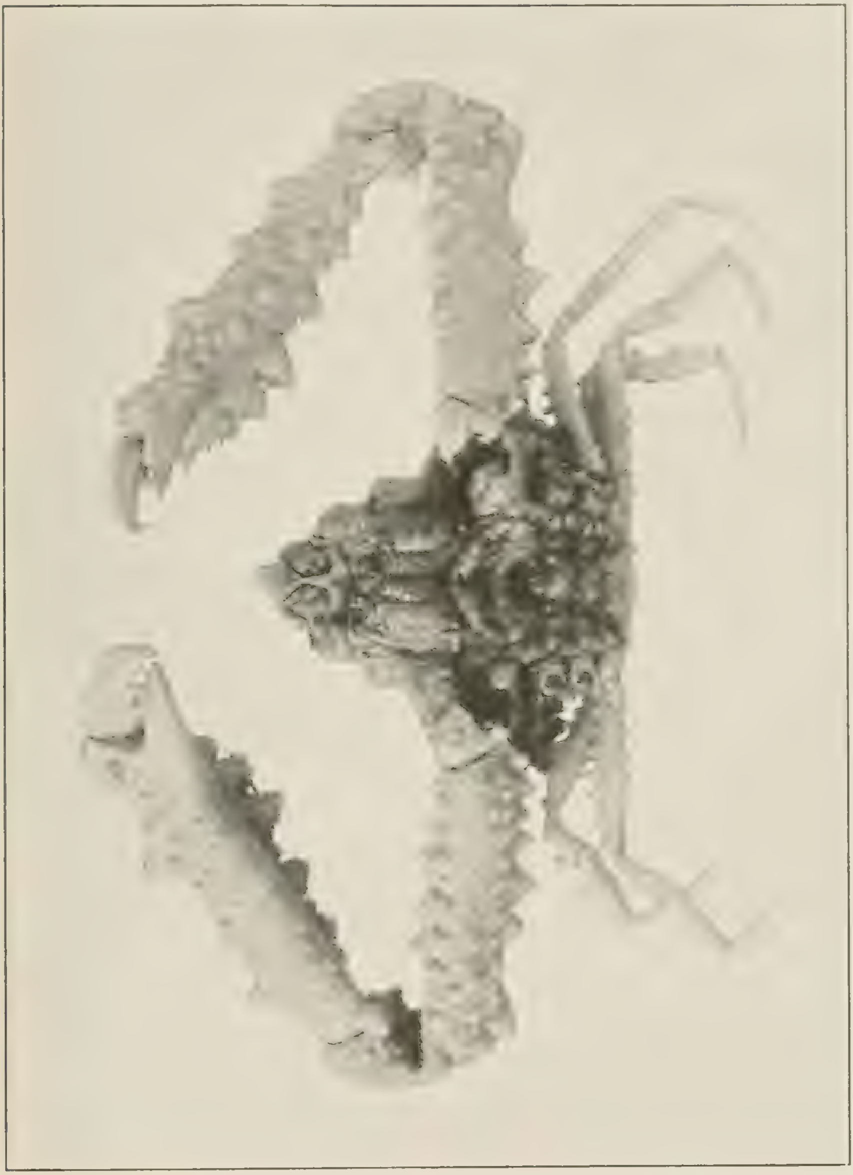
PARTHENOPE (PLATYLAMBRUS) EXILIPES. (PAGE 523)

FOR EXPLANATION OF PLATE SEE PAGE 582



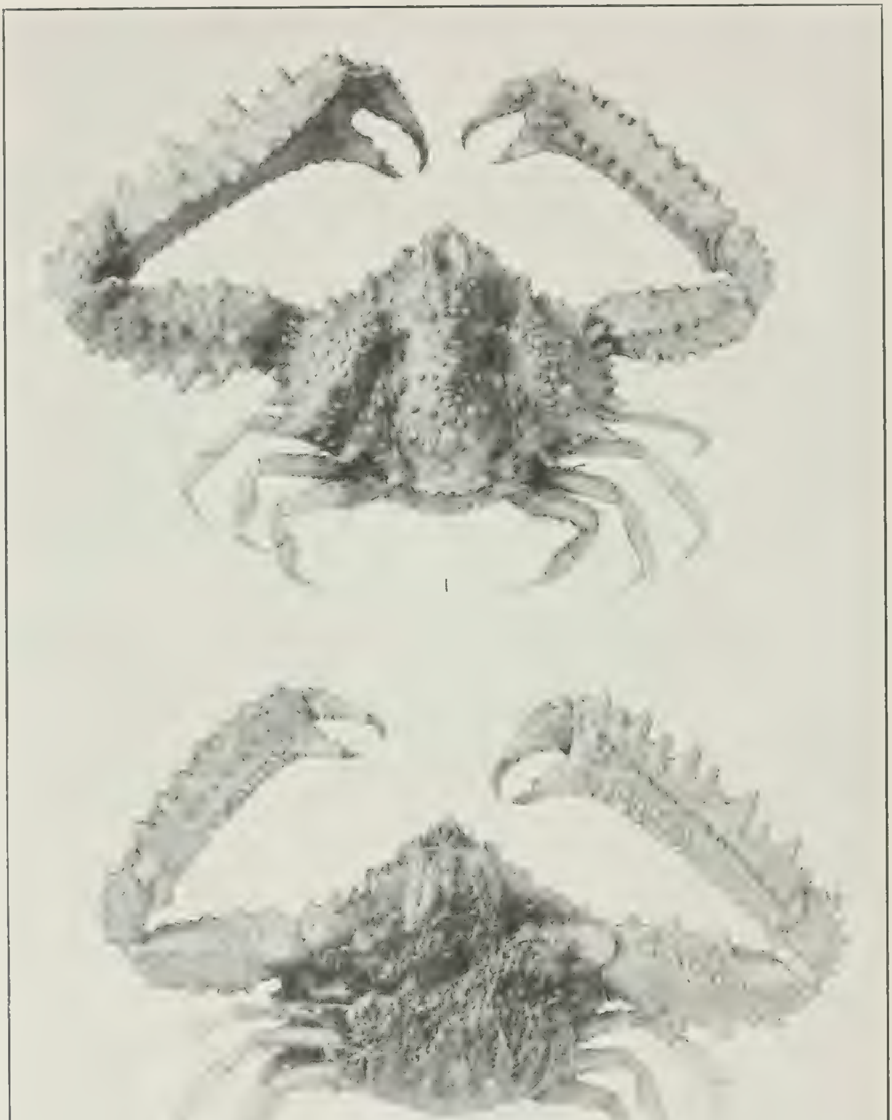
Parthenope (Platylambrus) fraterculus. (Page 525)

For explanation of plate see page 682



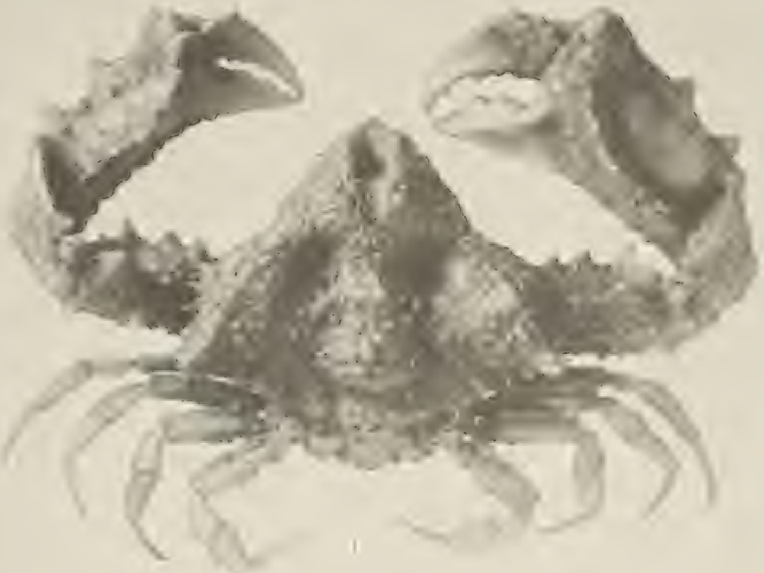
PARTHENOPE (PLATYLAMBRUS) FRATERCULUS. (PAGE 525)

FOR EXPLANATION OF PLATE SEE PAGE 582



PARTHENOPE (PLATYLAMBRUS) DEPRESSIUSCULA. (PAGE 524)

FOR EXPLANATION OF PLATE SEE PAGE 583



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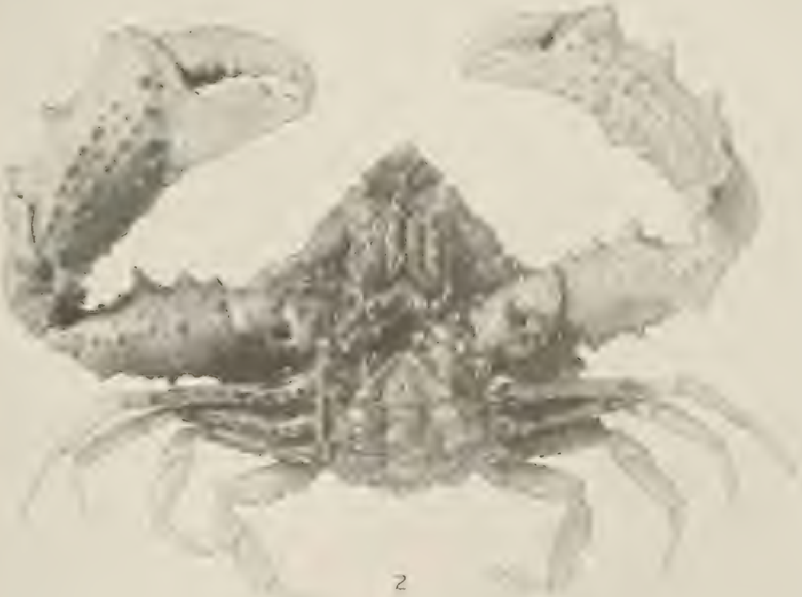
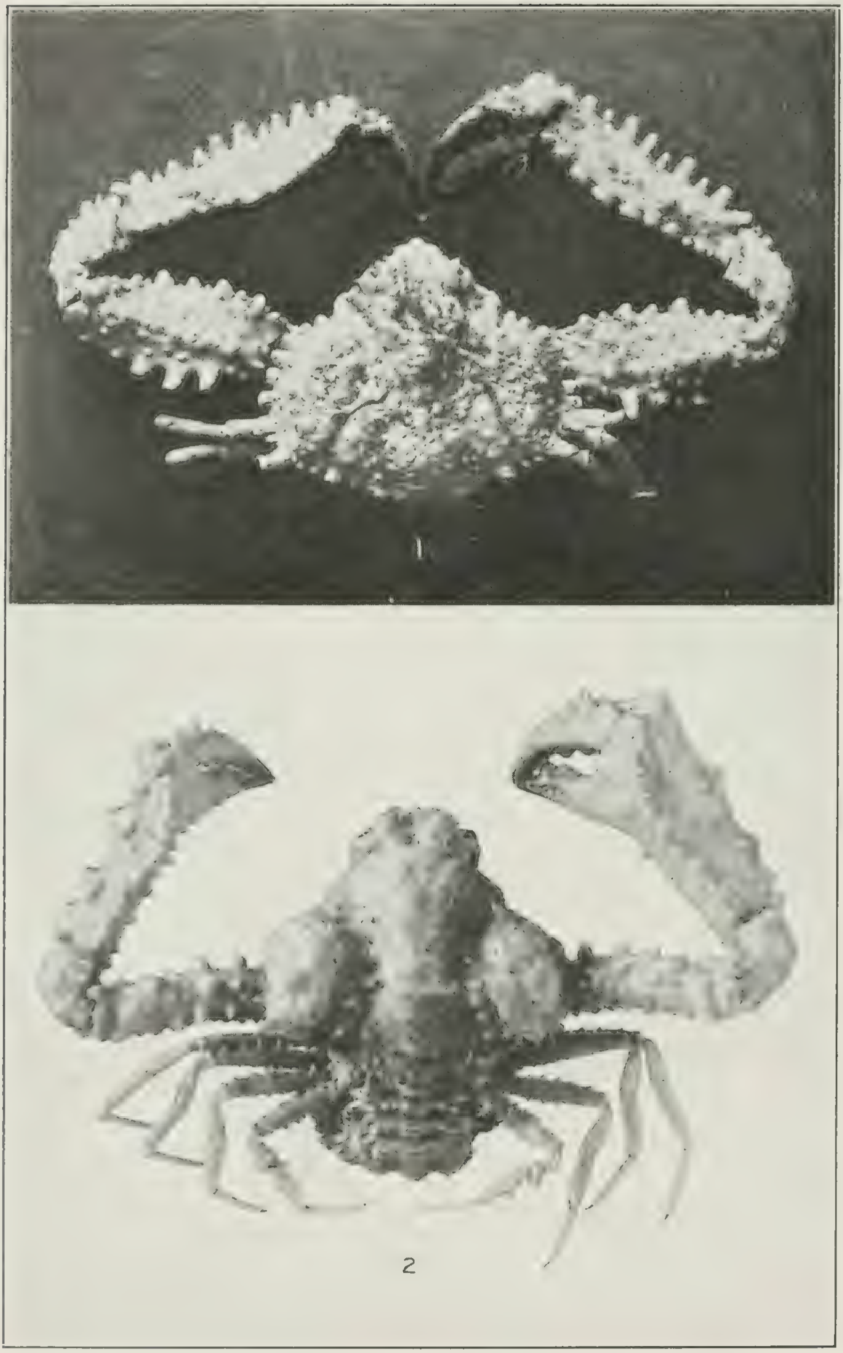


2

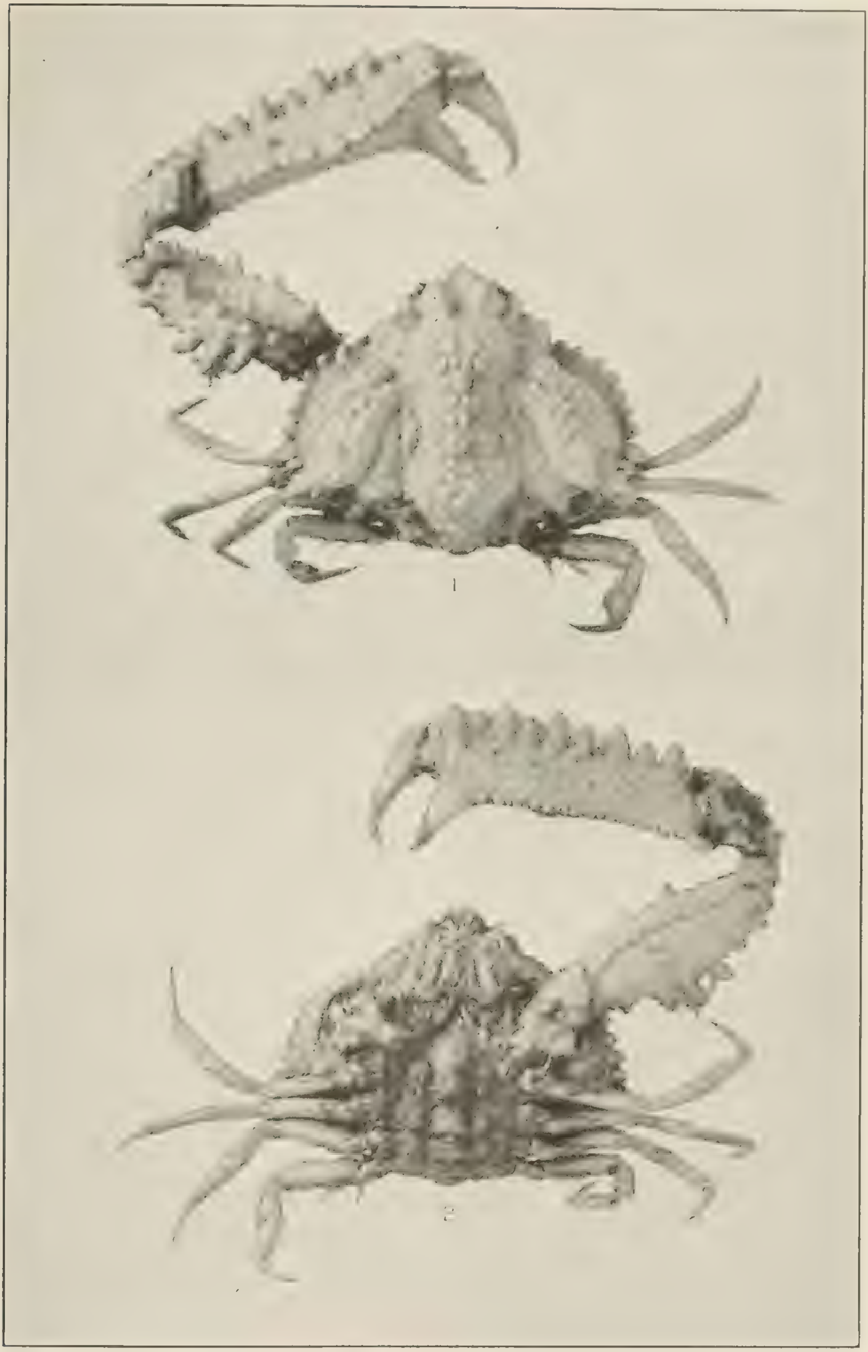
Parthenope (Pseudolambrus) excavata. (Page 529)

For explanation of plate see page 583



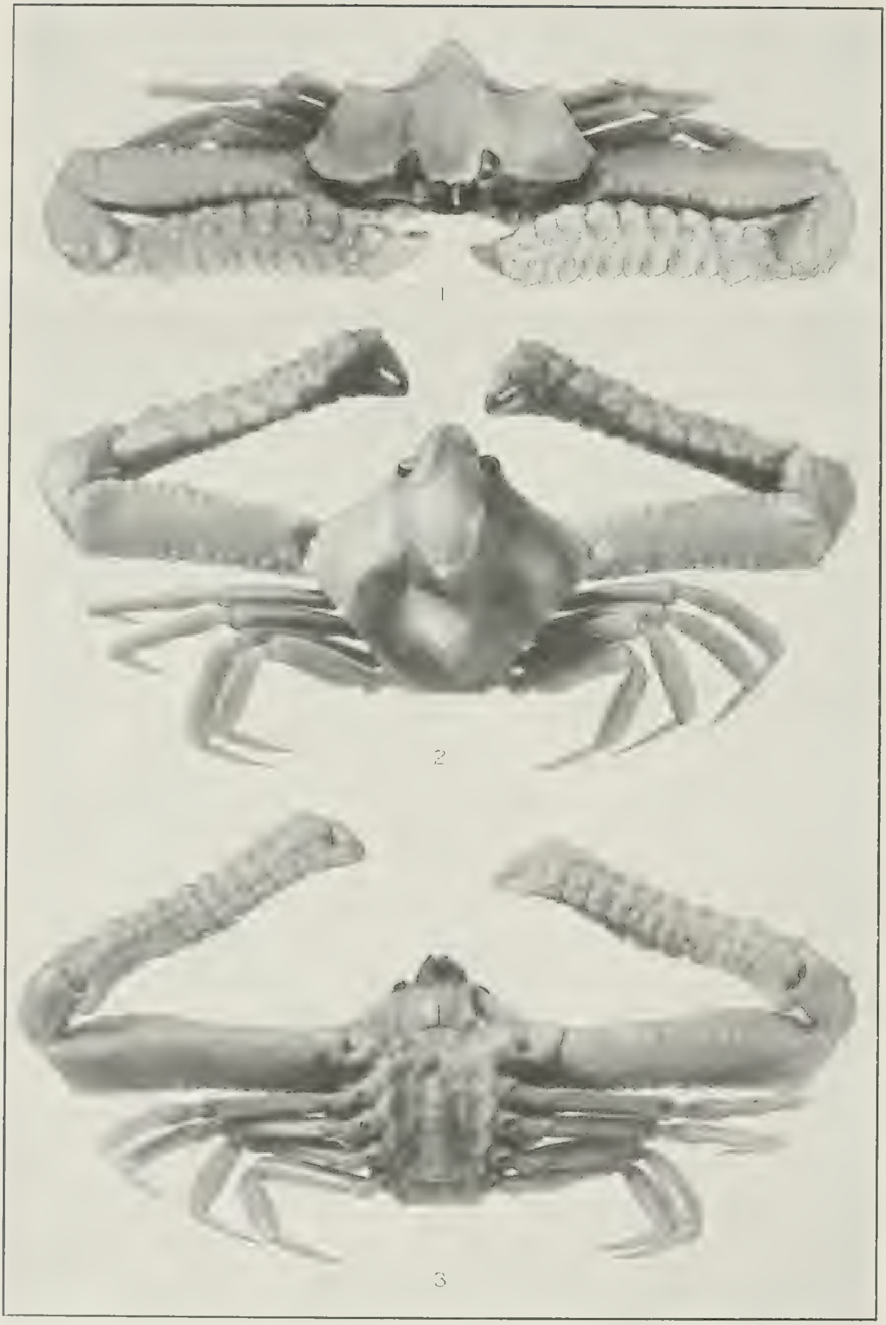
1. PARTHENOPE (PLATYLAMBRUS) GUERINI. (PAGE 525.)
2. P. (PLATYLAMBRUS) FRATERCULUS. (PAGE 525)

FOR EXPLANATION OF PLATE SEE PAGE 583



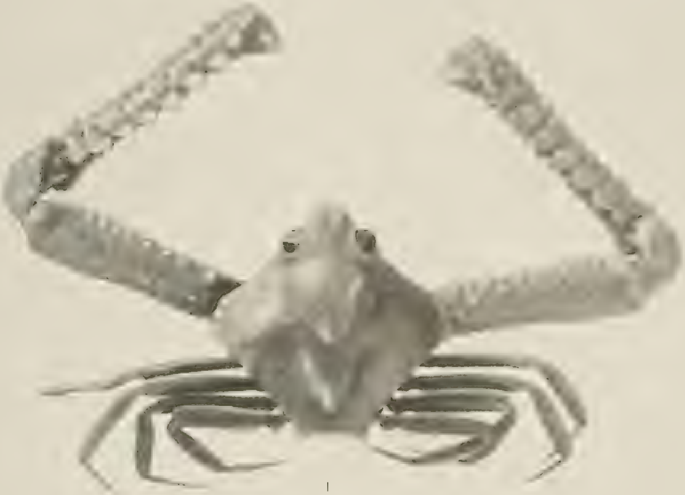
PARTHENOPE (PLATYLAMBRUS) GUERINI. (PAGE 525)

FOR EXPLANATION OF PLATE SEE PAGE 583



SOLENOLAMBRUS TYPICUS. (PAGE 537)

FOR EXPLANATION OF PLATE SEE PAGE 583



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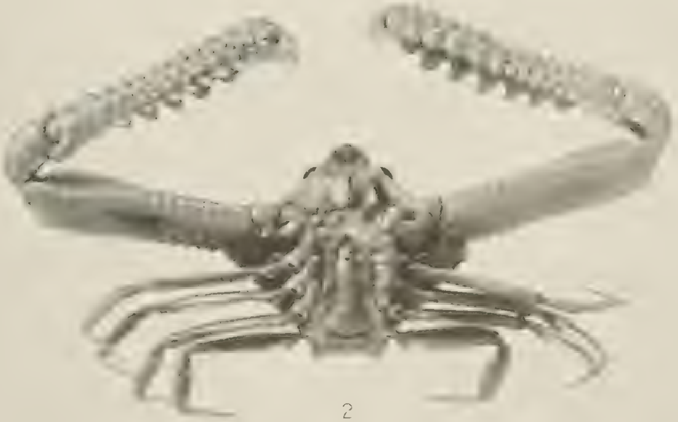
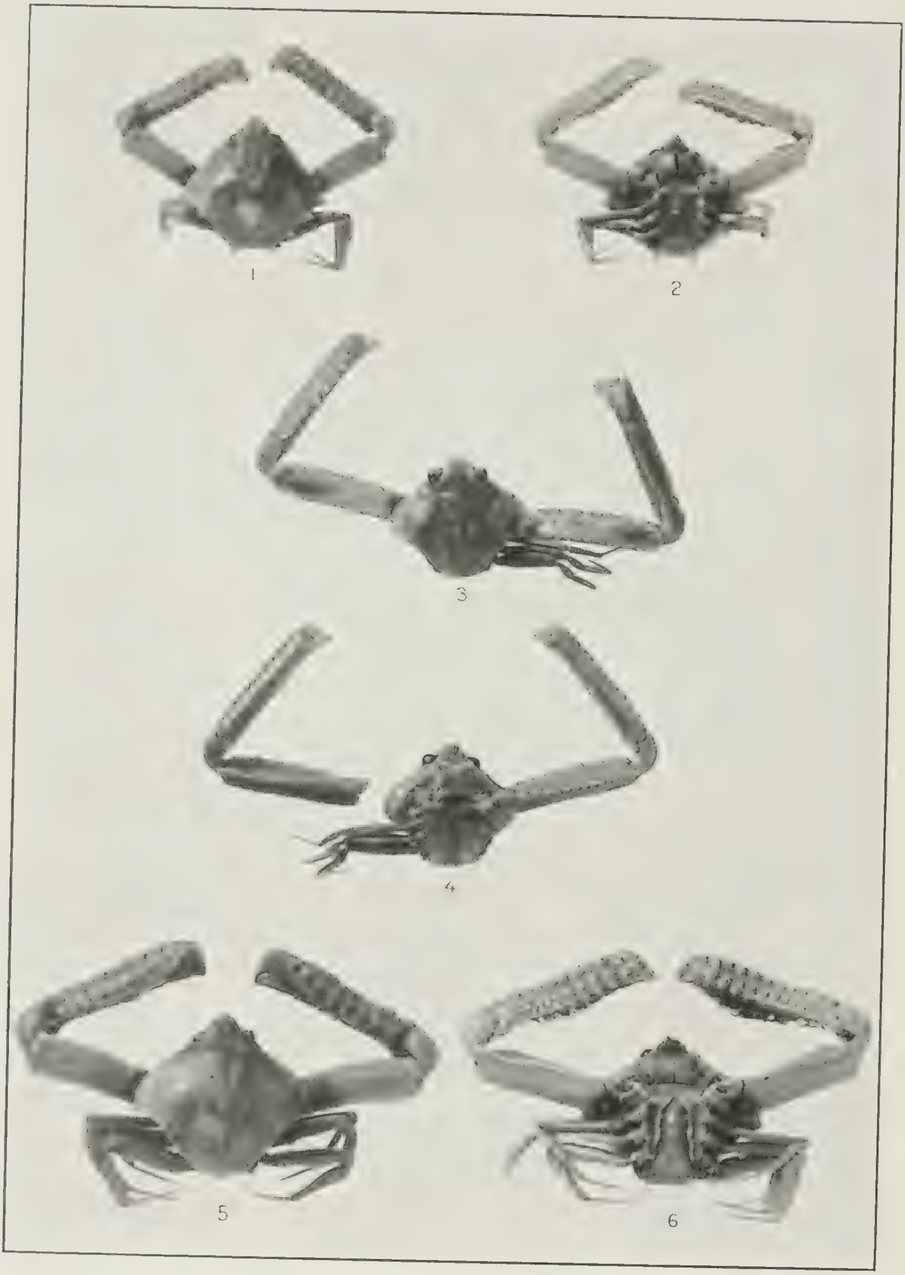


2

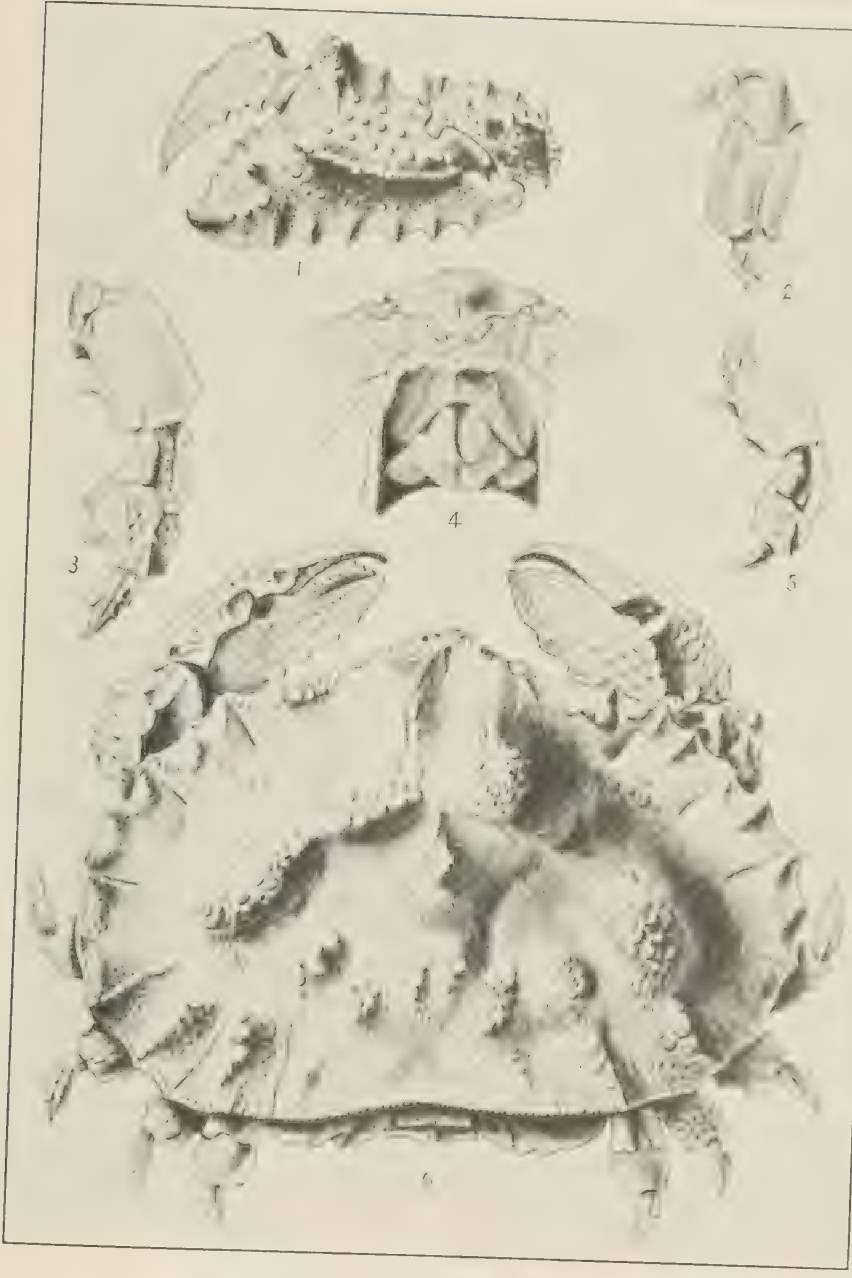
Solenolambrus typicus. (Page 537)

For explanation of plate see page 583



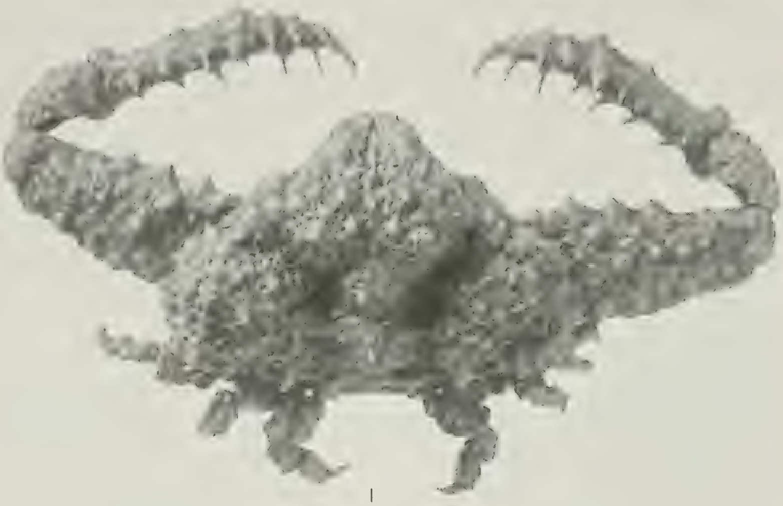
1, 2. Solenolambrus decemspinosus. (Page 540.) 3, 4. S. tenellus. (Page 541.) 5, 6. S. portoricensis. (Page 539)

For explanation of plate see page 583



Aethra scruposa scutata. (Page 552)

For explanation of plate see page 583



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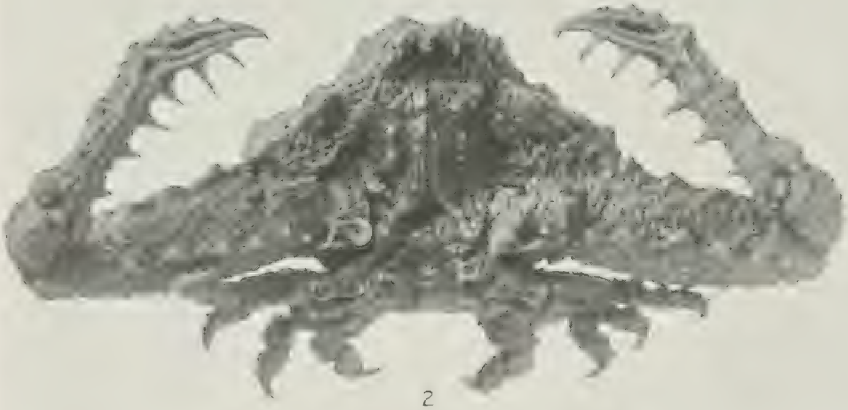
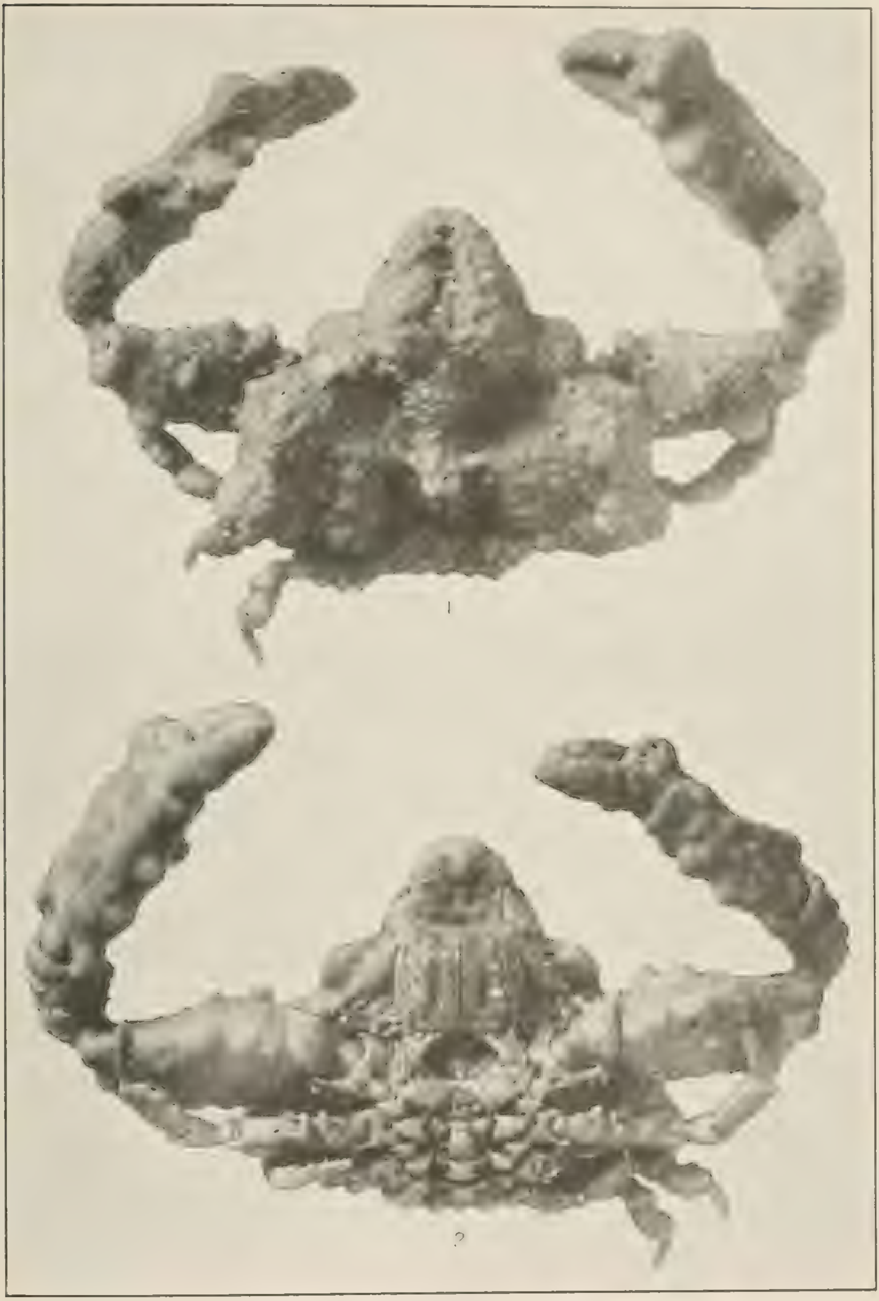


2

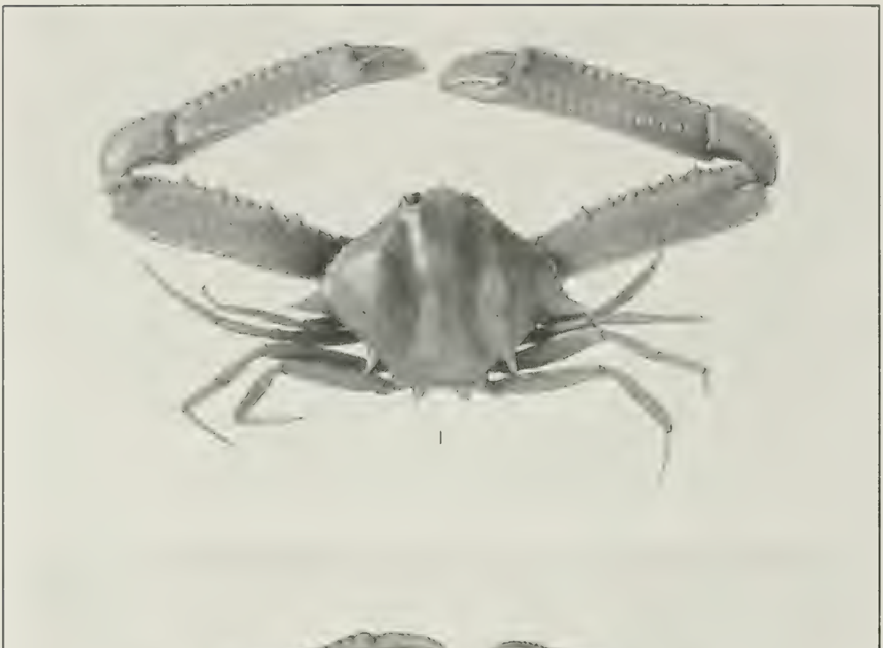
Thyrolambrus astroides. (Page 532)

For explanation of plate see page 584



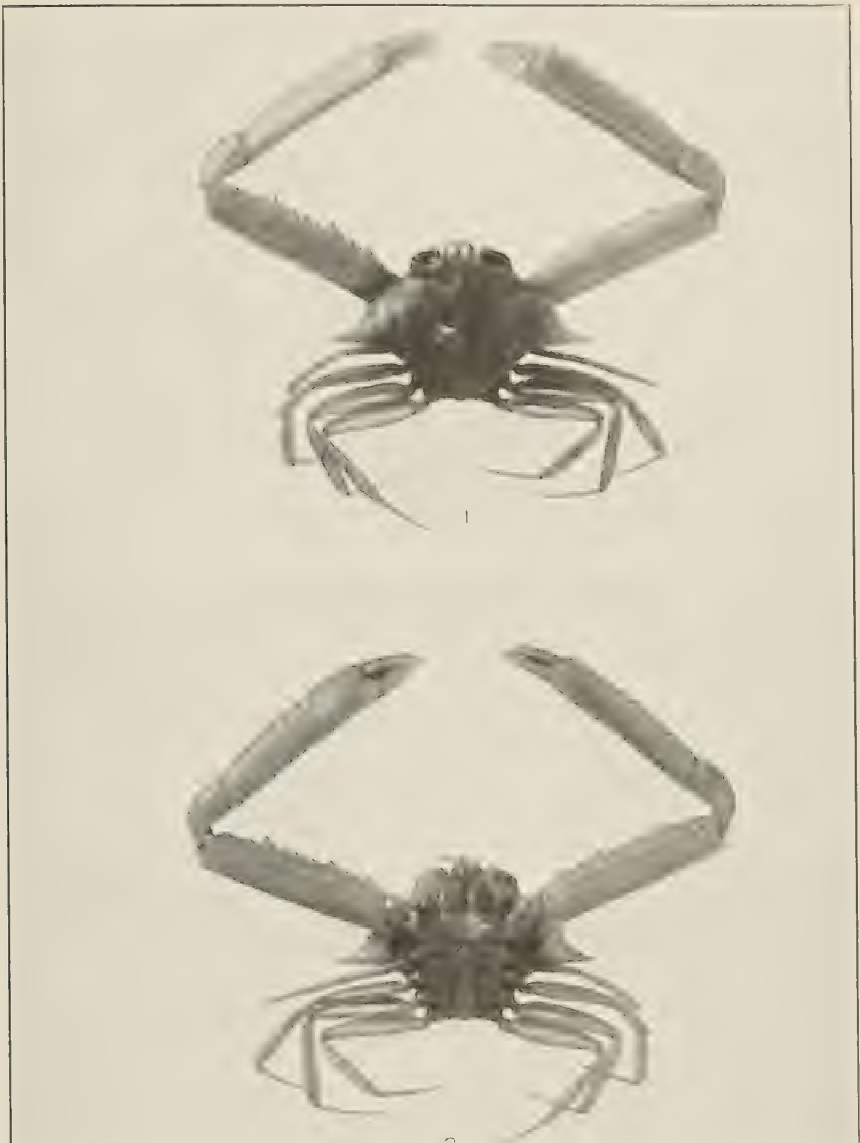
THYROLAMBRUS EROSUS. (PAGE 533)

FOR EXPLANATION OF PLATE SEE PAGE 584



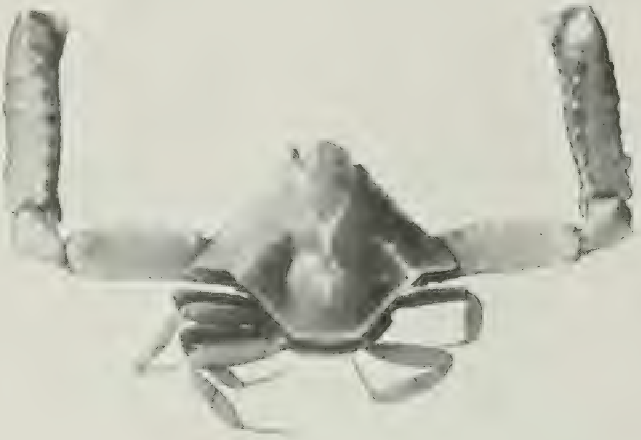
Leiolambrus punctatissimus. (Page 543)

For explanation of plate see page 584



Leiolambrus nitidus. (Page 545)

For explanation of plate see page 584



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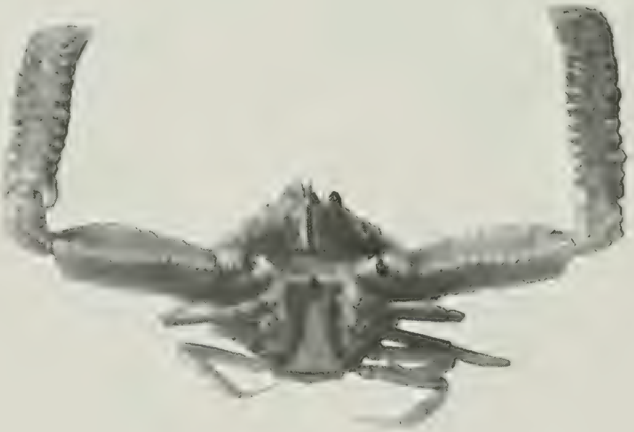

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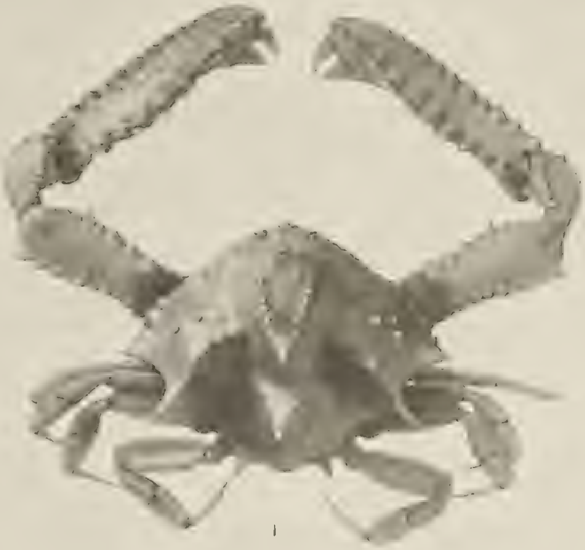
MESORHOEA SEXSPINOSA. (PAGE 547)

FOR EXPLANATION OF PLATE SEE PAGE 584



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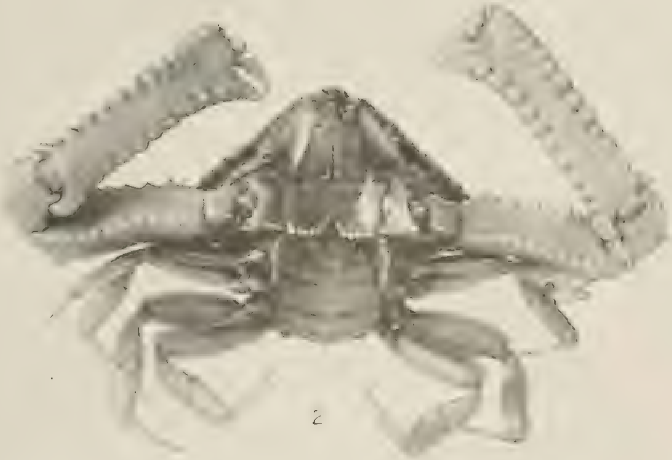

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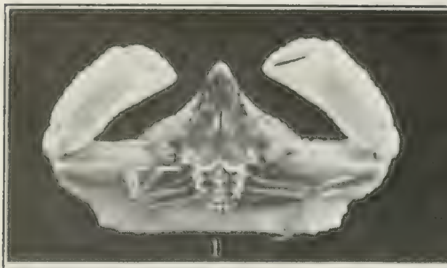
MESORHOEA BELLII. (PAGE 548)

FOR EXPLANATION OF PLATE SEE PAGE 584



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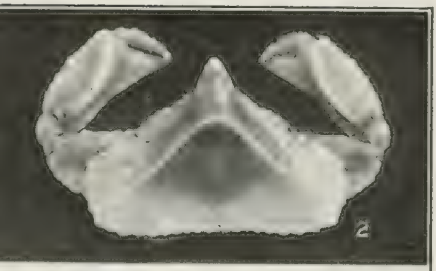

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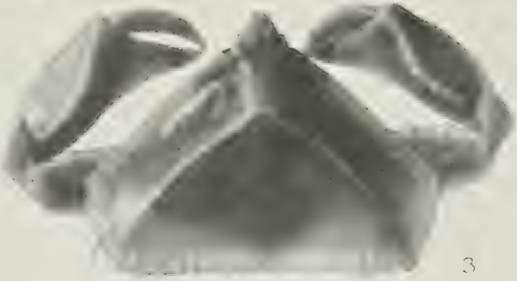

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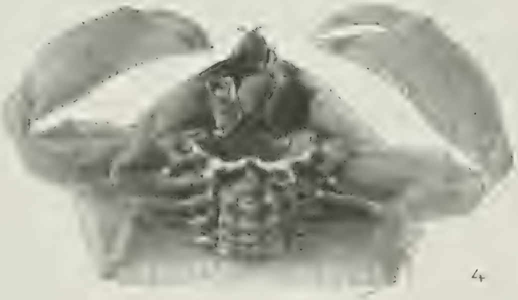

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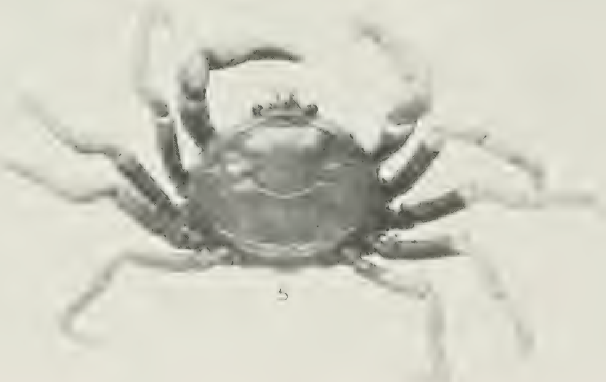

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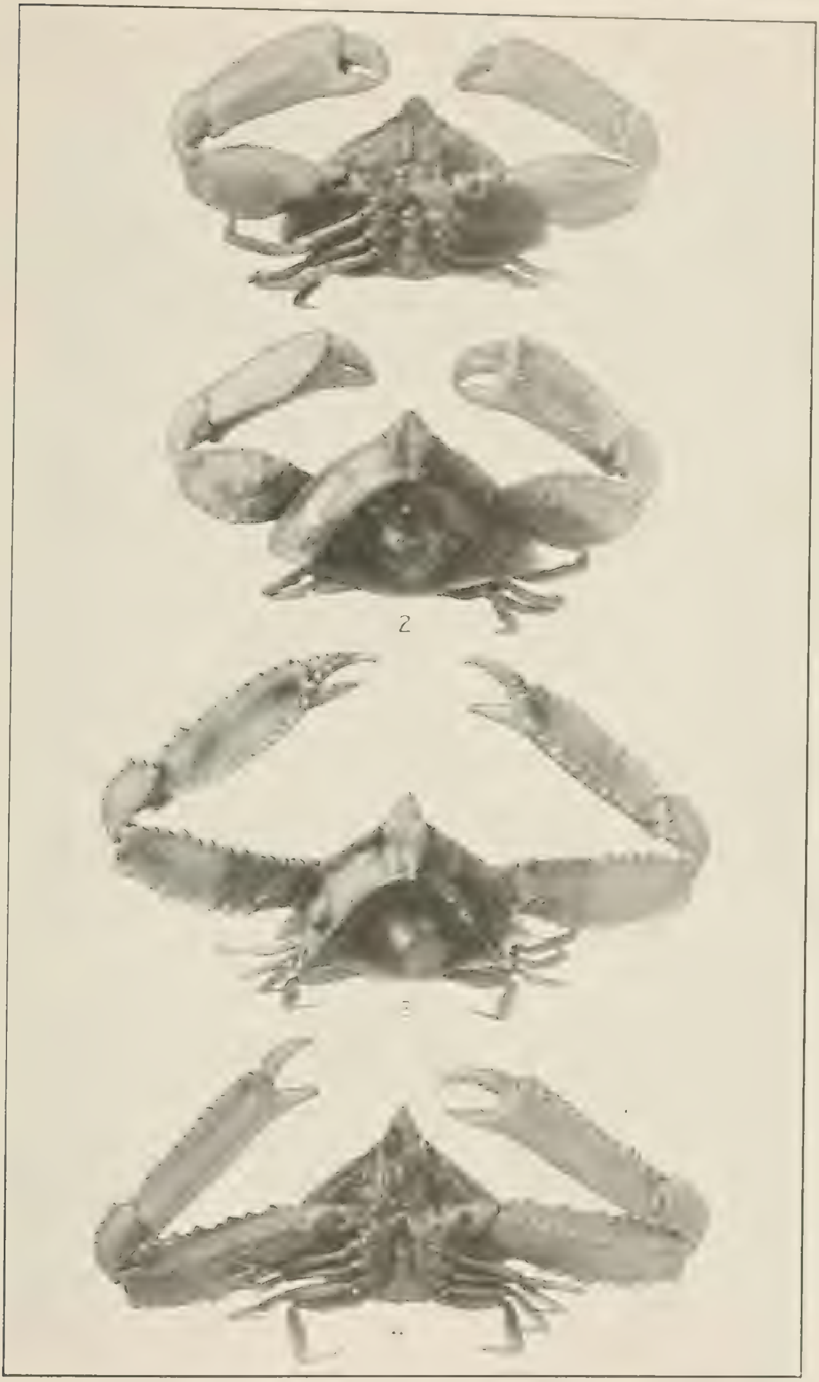
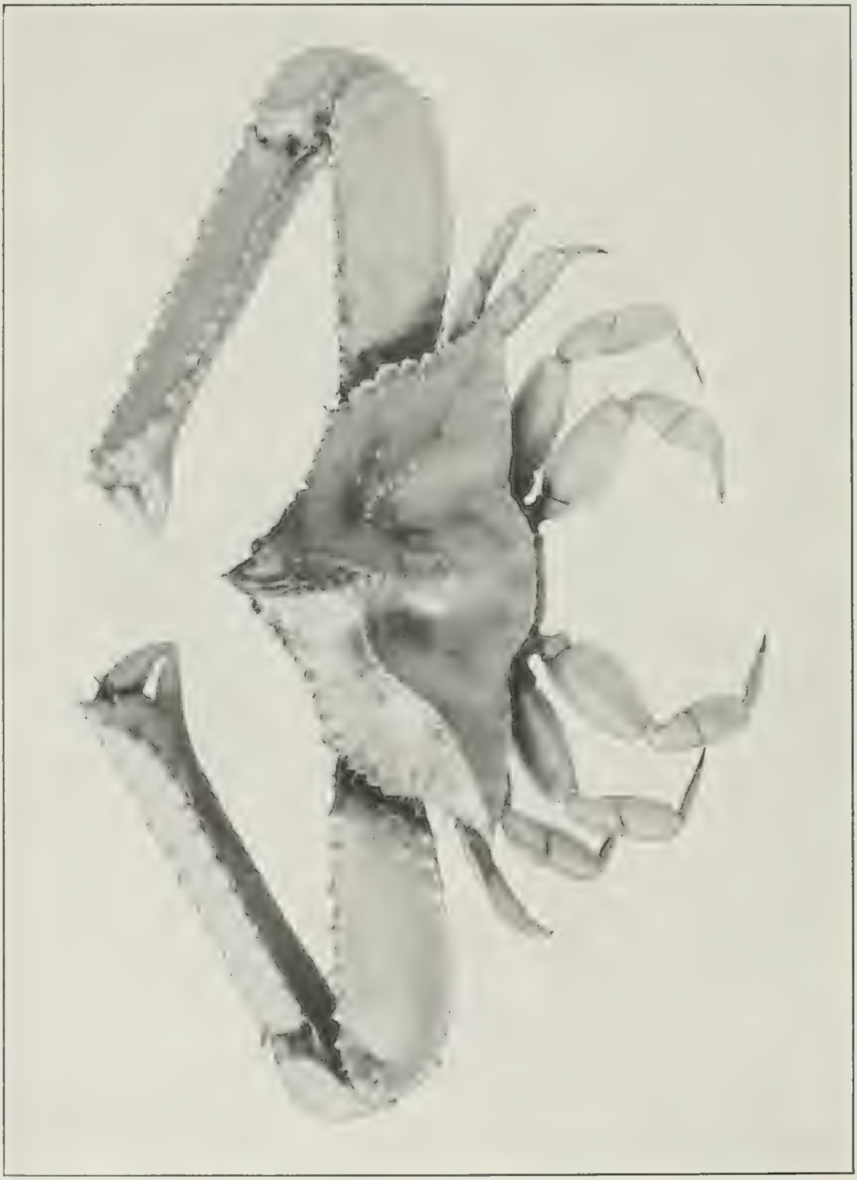
1, 2. Cryptopodia hassleri. (Page 554.) 3, 4. C. concava. (Page 553.) 5. Halicarcinus planatus. (Page 563)

For explanation of plate see page 584



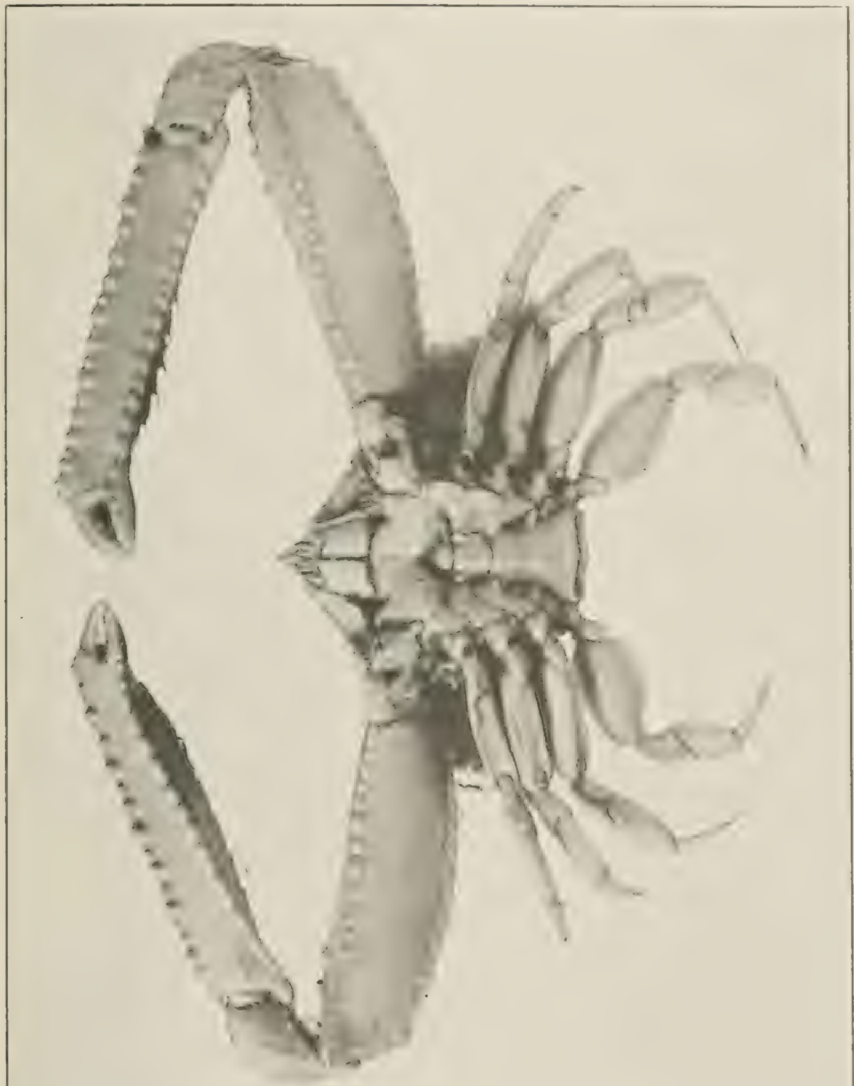
1, 2. Heterocrypta granulata. (Page 555.) 3, 4. H. macrobrachia. (Page 558)

For explanation of plate see page 584



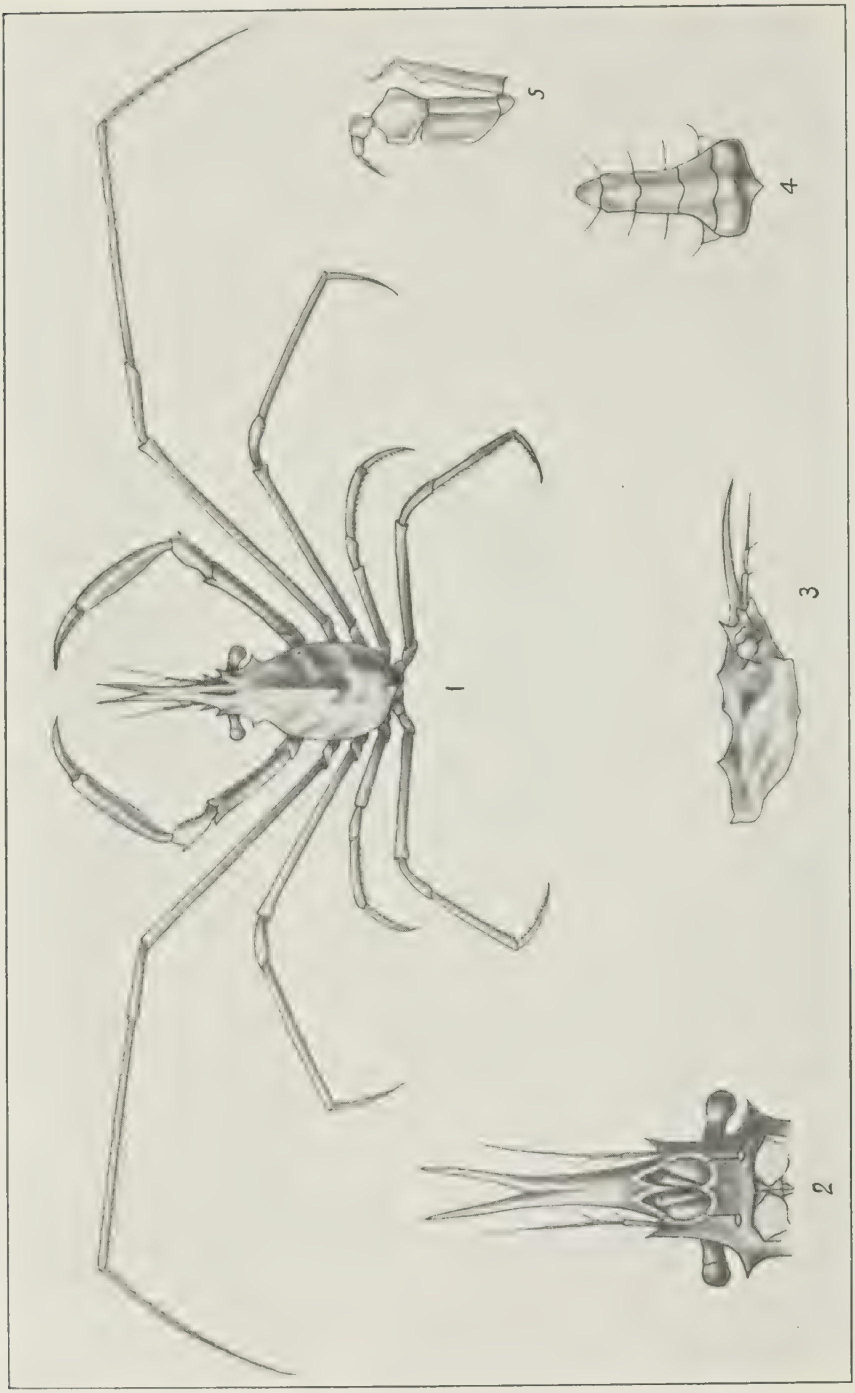
Heterocrypta occidentalis. (Page 559)

For explanation of plate see page 584



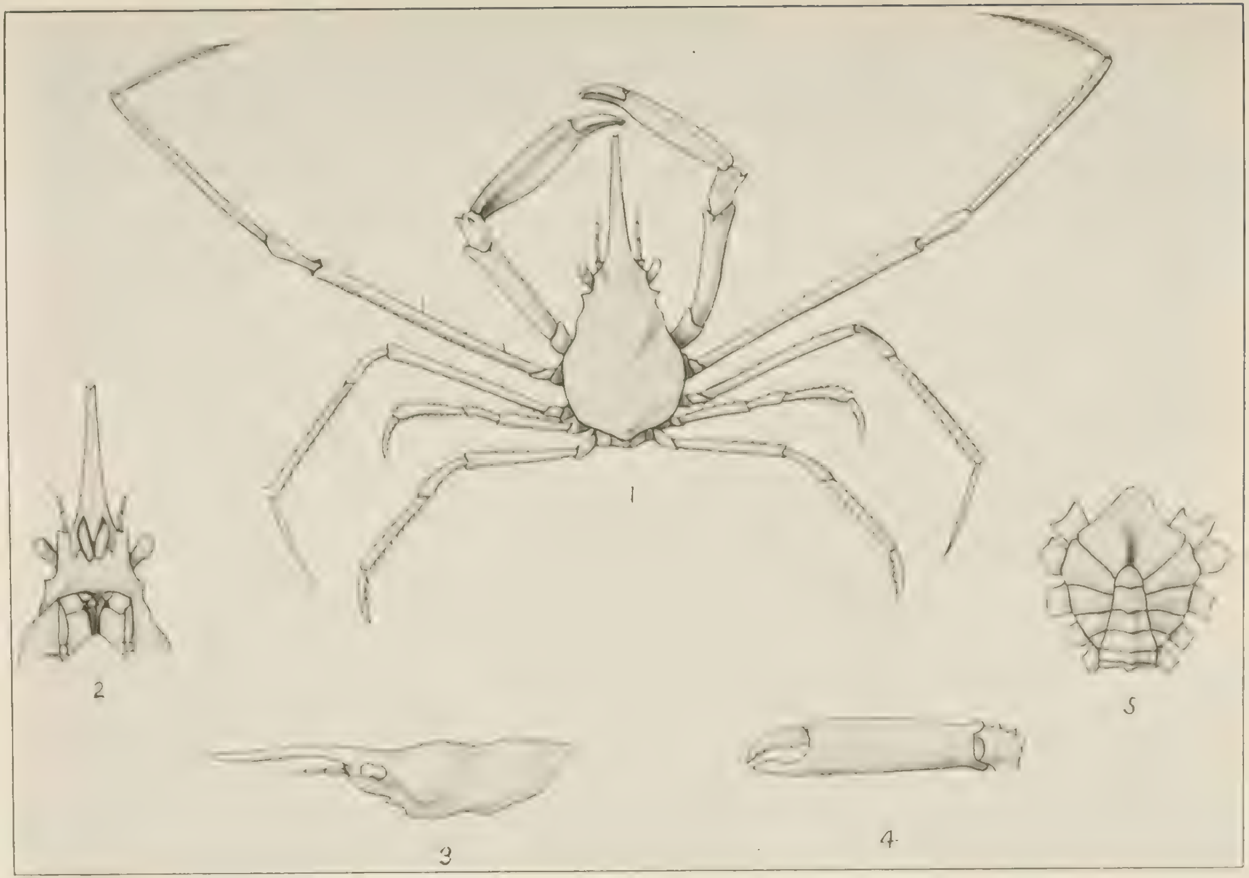
HETEROCRYPTA OCCIDENTALIS. (PAGE 559)

FOR EXPLANATION OF PLATE SEE PAGE 584



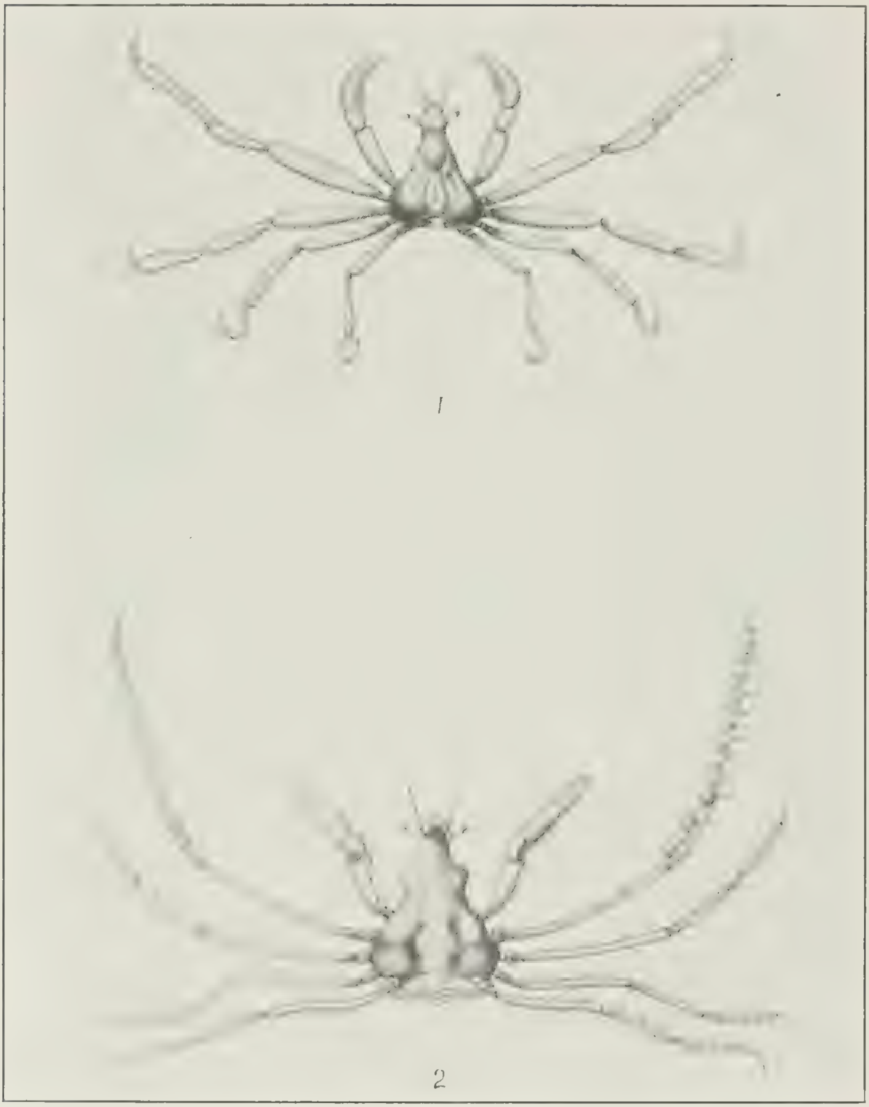
ANOMALOTHIR FURCILLATUS. (PAGE 24)

FOR EXPLANATION OF PLATE SEE PAGE 585



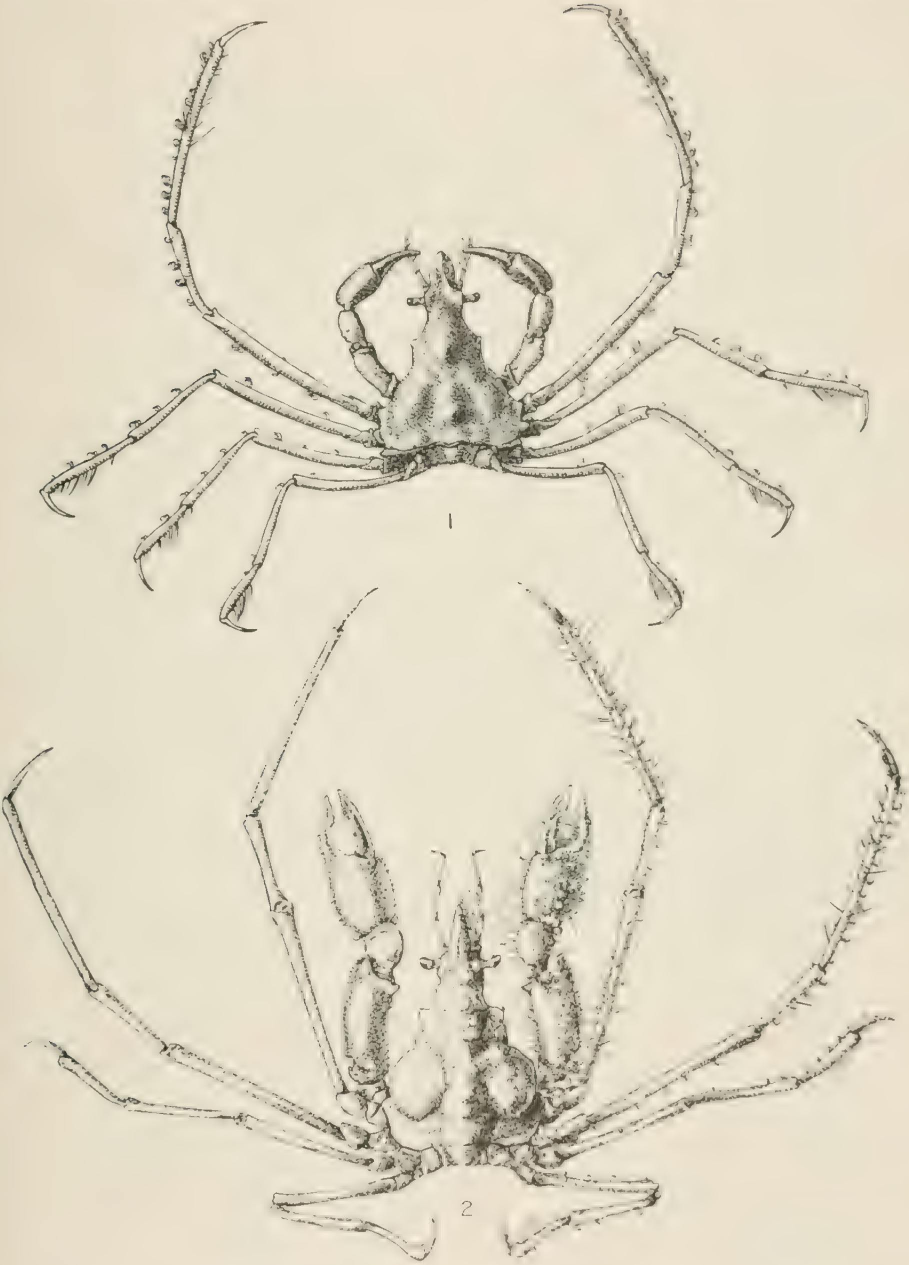
ANOMALOTHIR FRONTALIS. (PAGE 25)

FOR EXPLANATION OF PLATE SEE PAGE 685



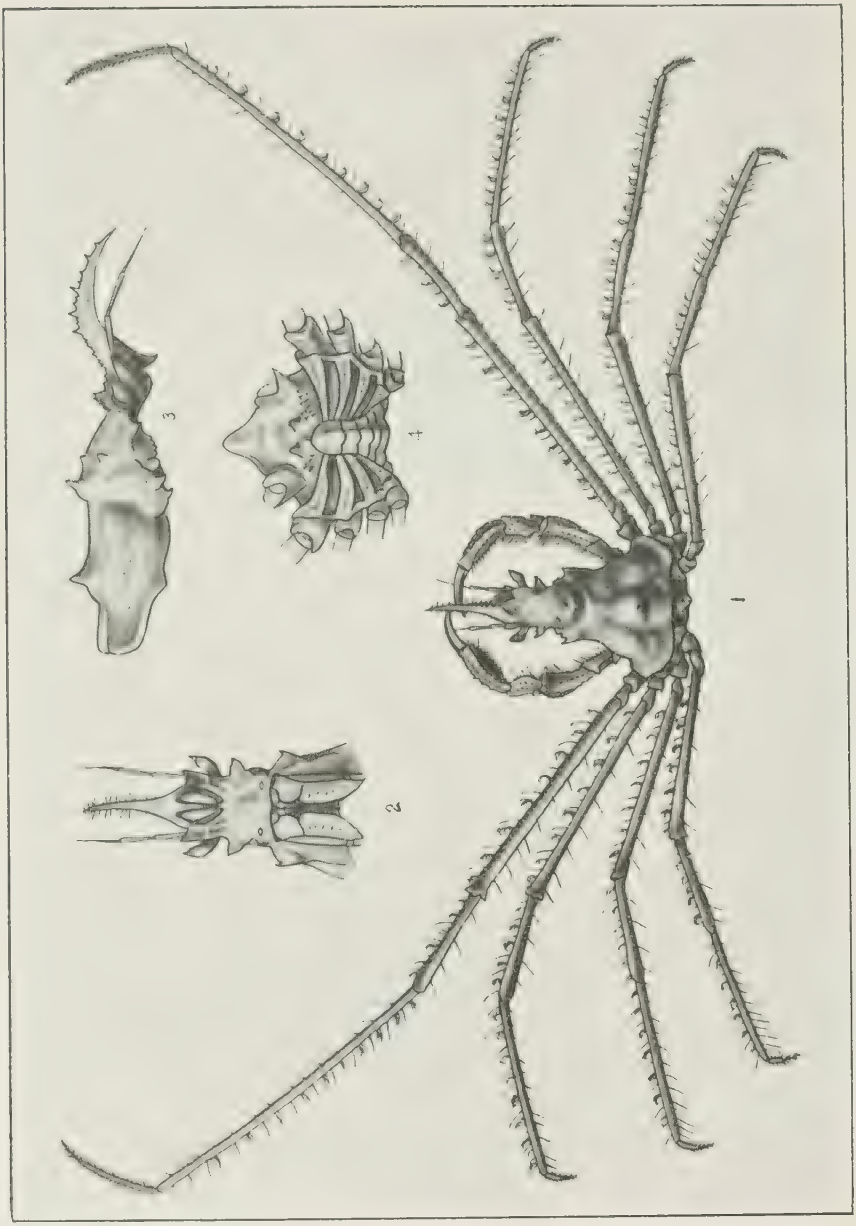
1. Podochela grossipes. (Page 45.) 2. P. riisei. (Page 33)

For explanation of plate see page 585



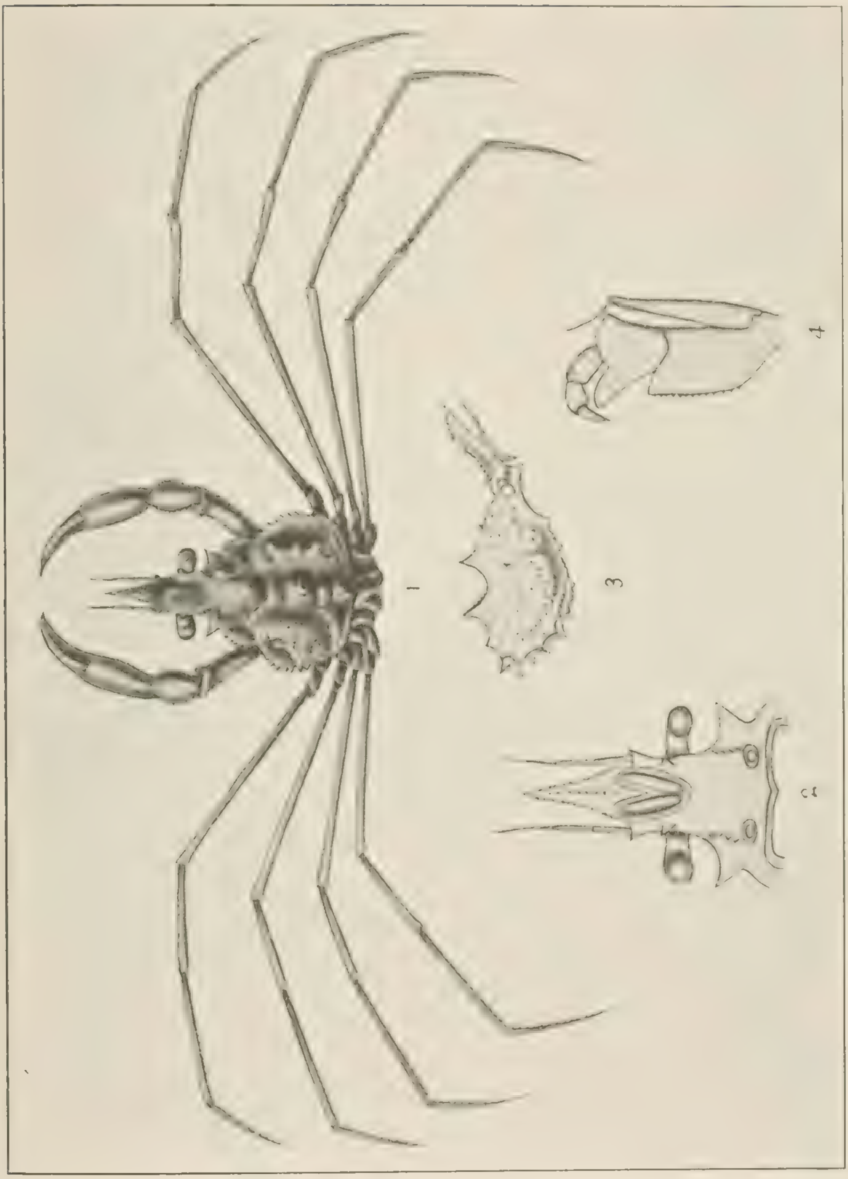
1. PODOCHELA MARGARITARIA. (PAGE 43.) 2. P. HEMPHILLII. (PAGE 49)

FOR EXPLANATION OF PLATE SEE PAGE 535



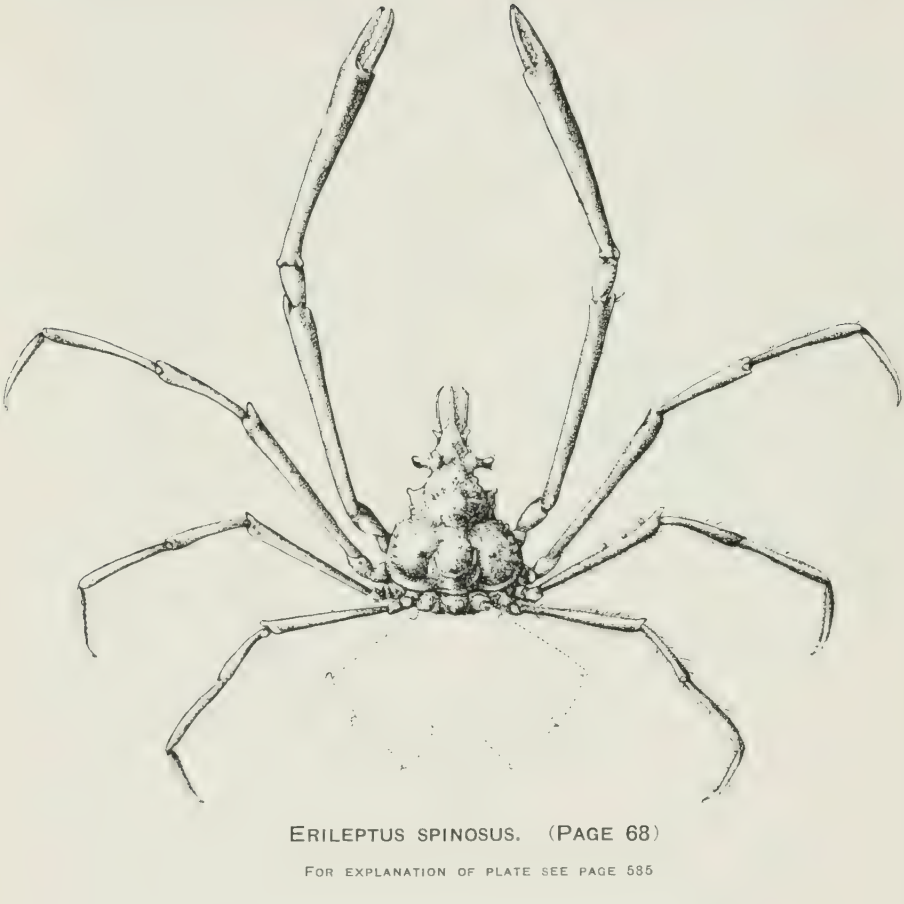
PODOCHELA CURVIROSTRIS. (PAGE 50)

FOR EXPLANATION OF PLATE SEE PAGE 585



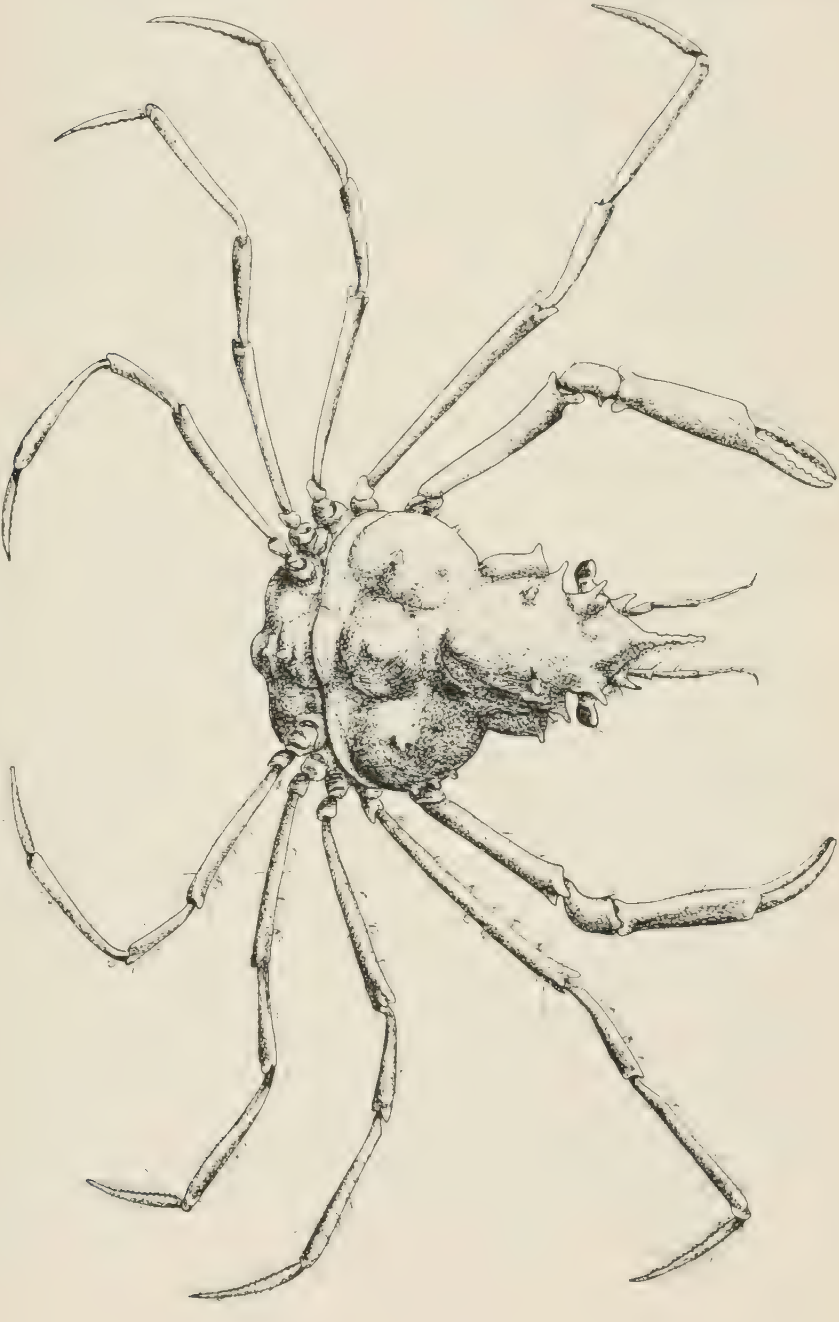
ANASIMUS FUGAX. (PAGE 64)

FOR EXPLANATION OF PLATE SEE PAGE 585



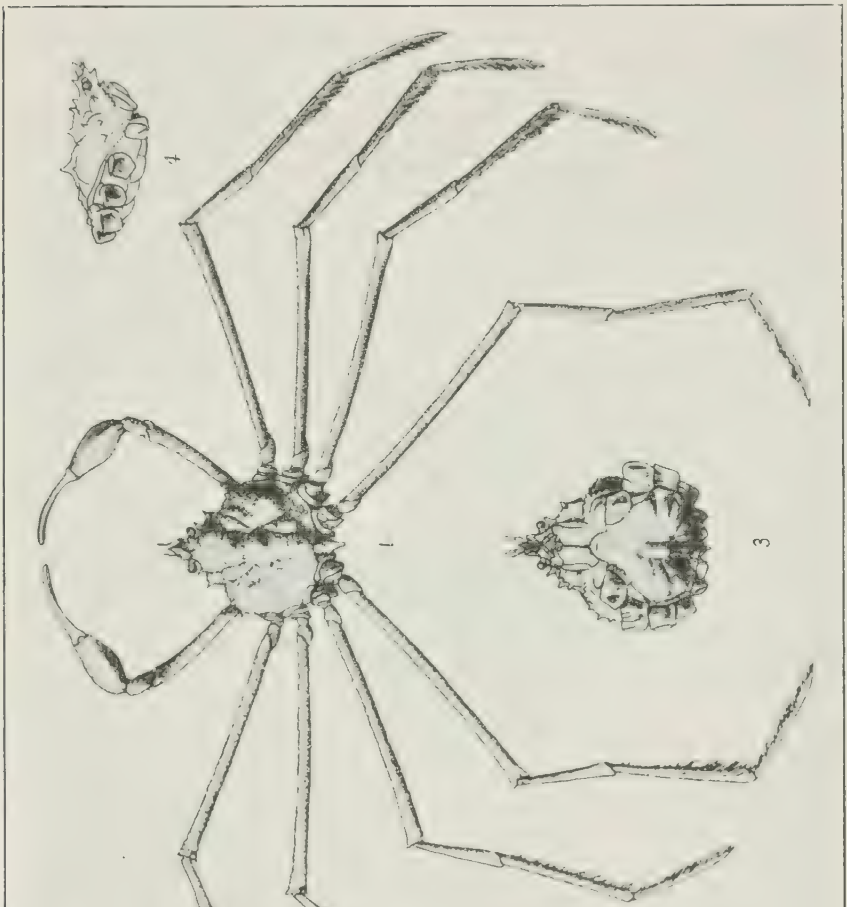
Erileptus spinosus. (Page 68)

For explanation of plate see page 585



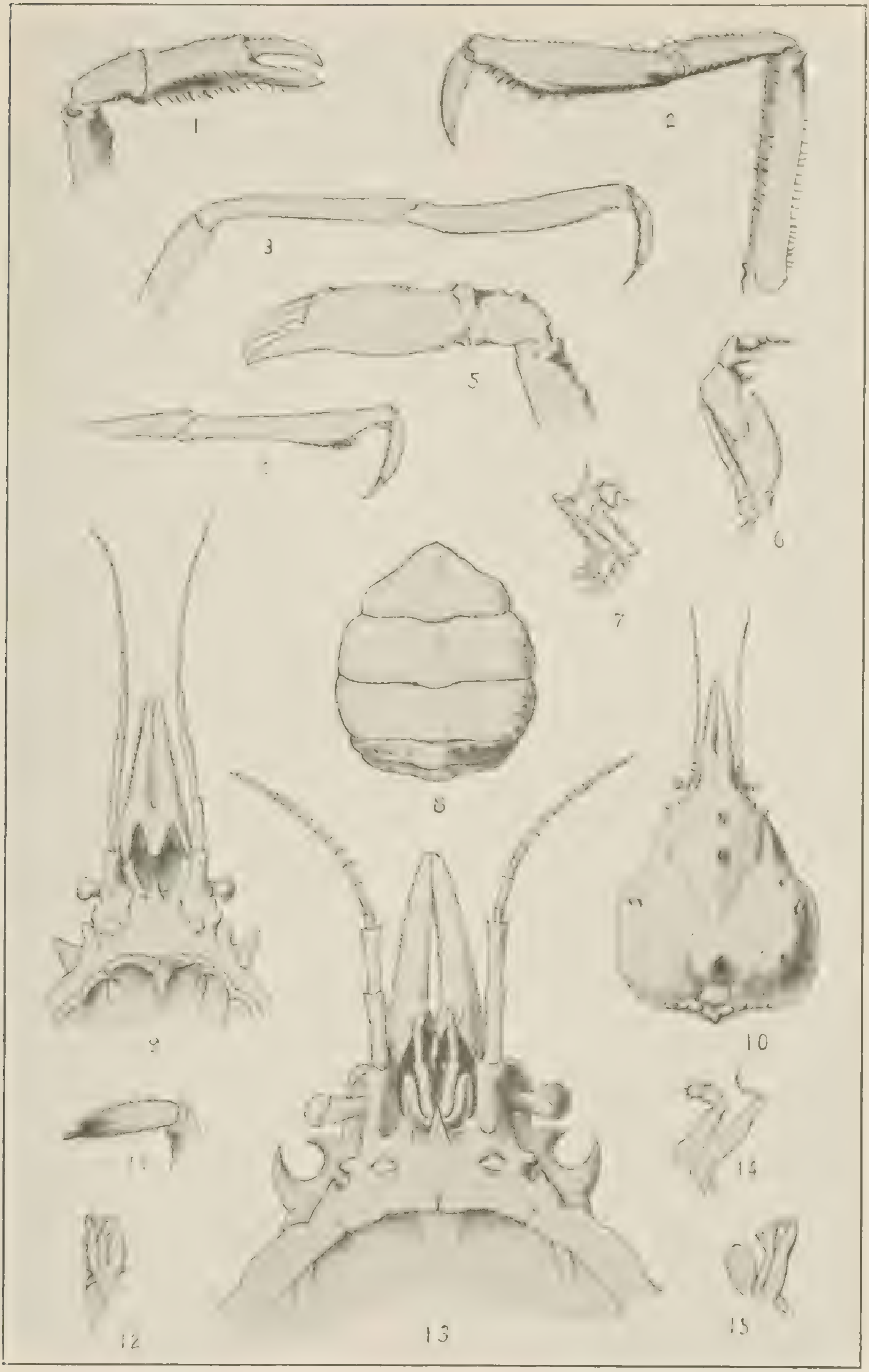
ERILEPTUS SPINOSUS. (PAGE 68)

FOR EXPLANATION OF PLATE SEE PAGE 585



ANASIMUS LATUS. (PAGE 65)

FOR EXPLANATION OF PLATE SEE PAGE 586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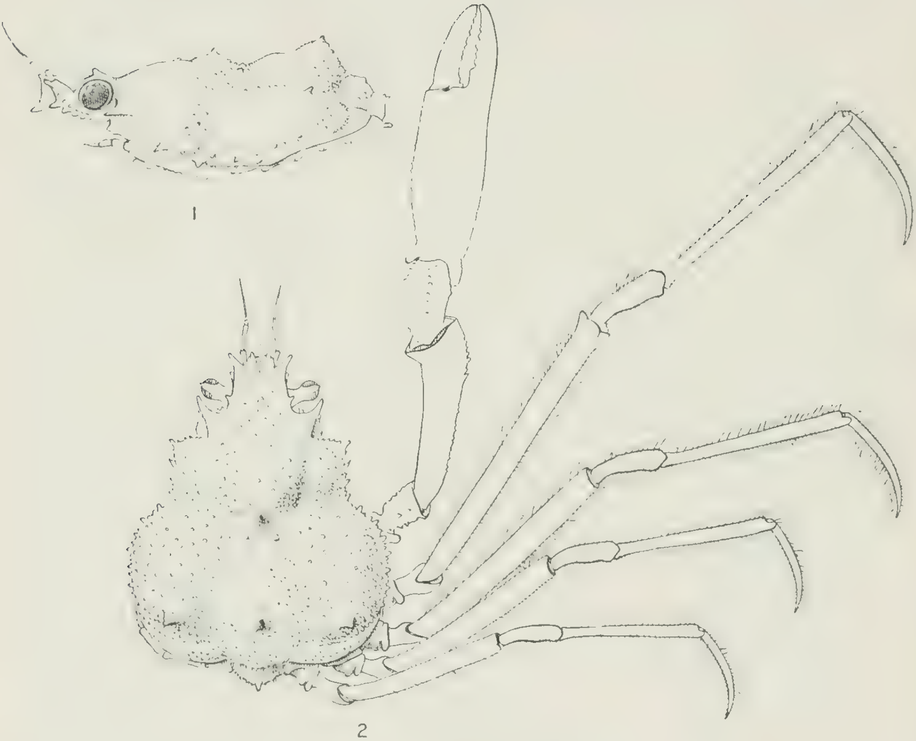
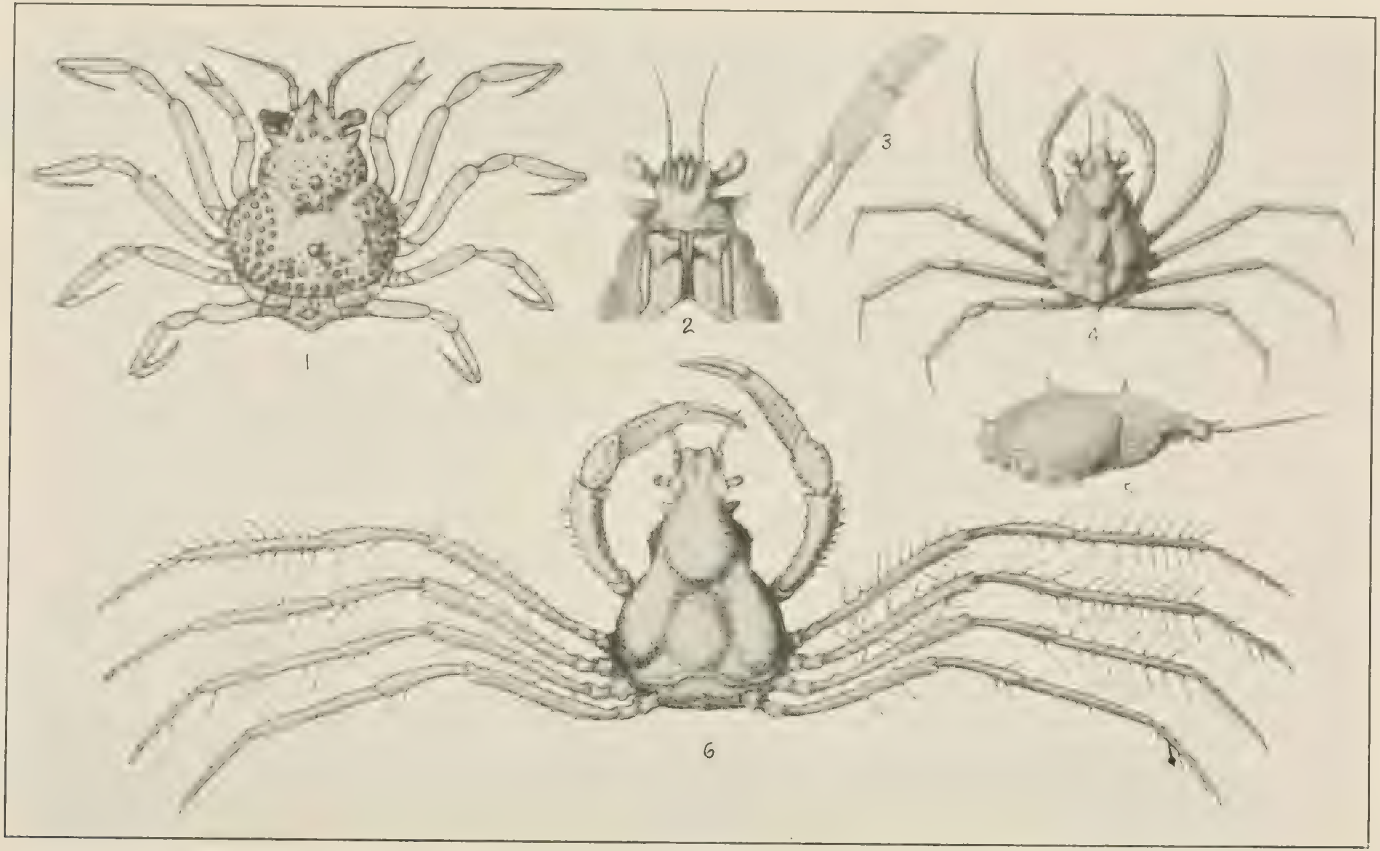
EURYPODIUS LATREILLII. (PAGE 80)

FOR EXPLANATION OF PLATE SEE PAGE 586



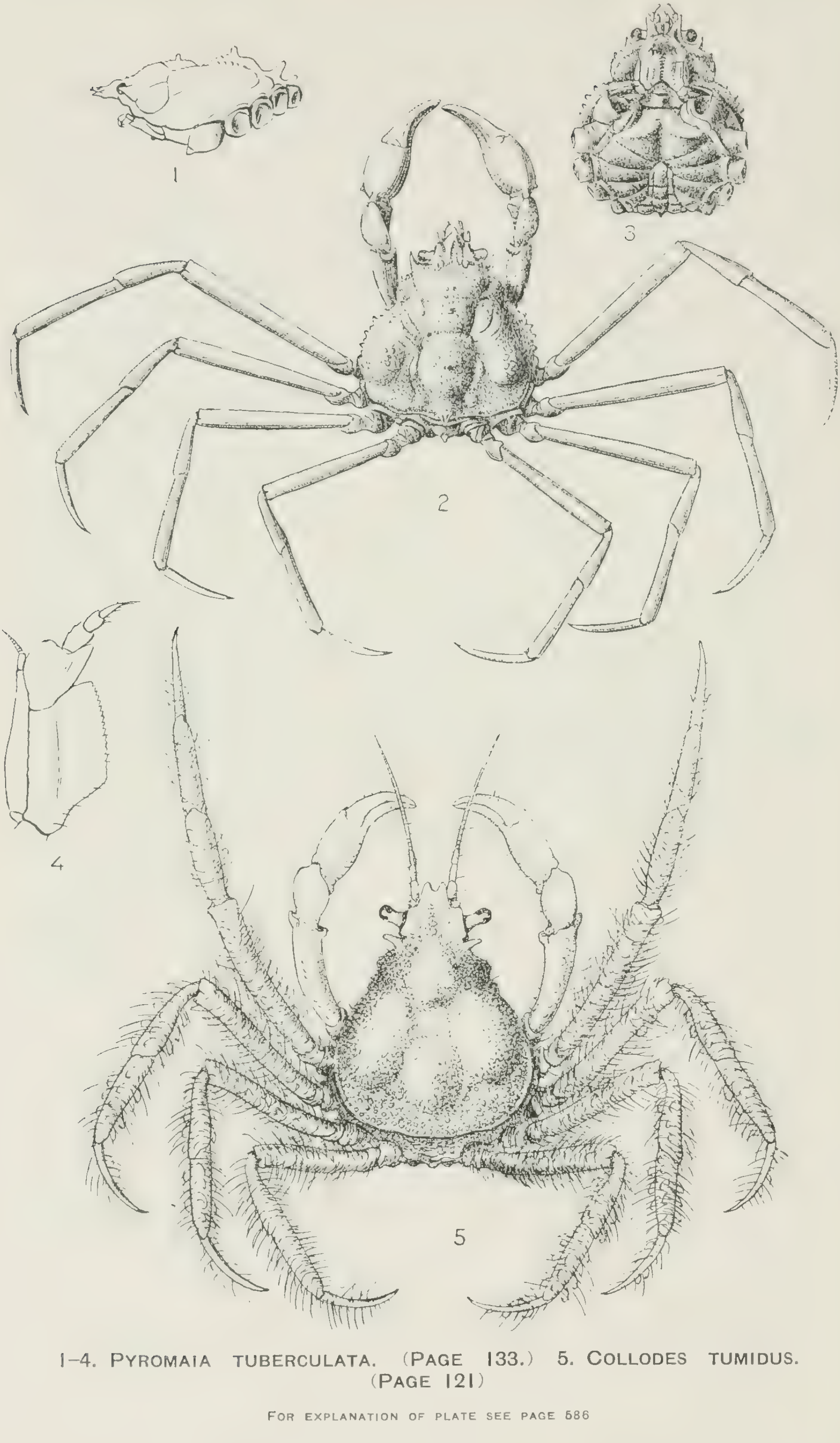
EUPROGNATHA RASTELLIFERA MARTHAE. (PAGE 96)

FOR EXPLANATION OF PLATE SEE PAGE 586



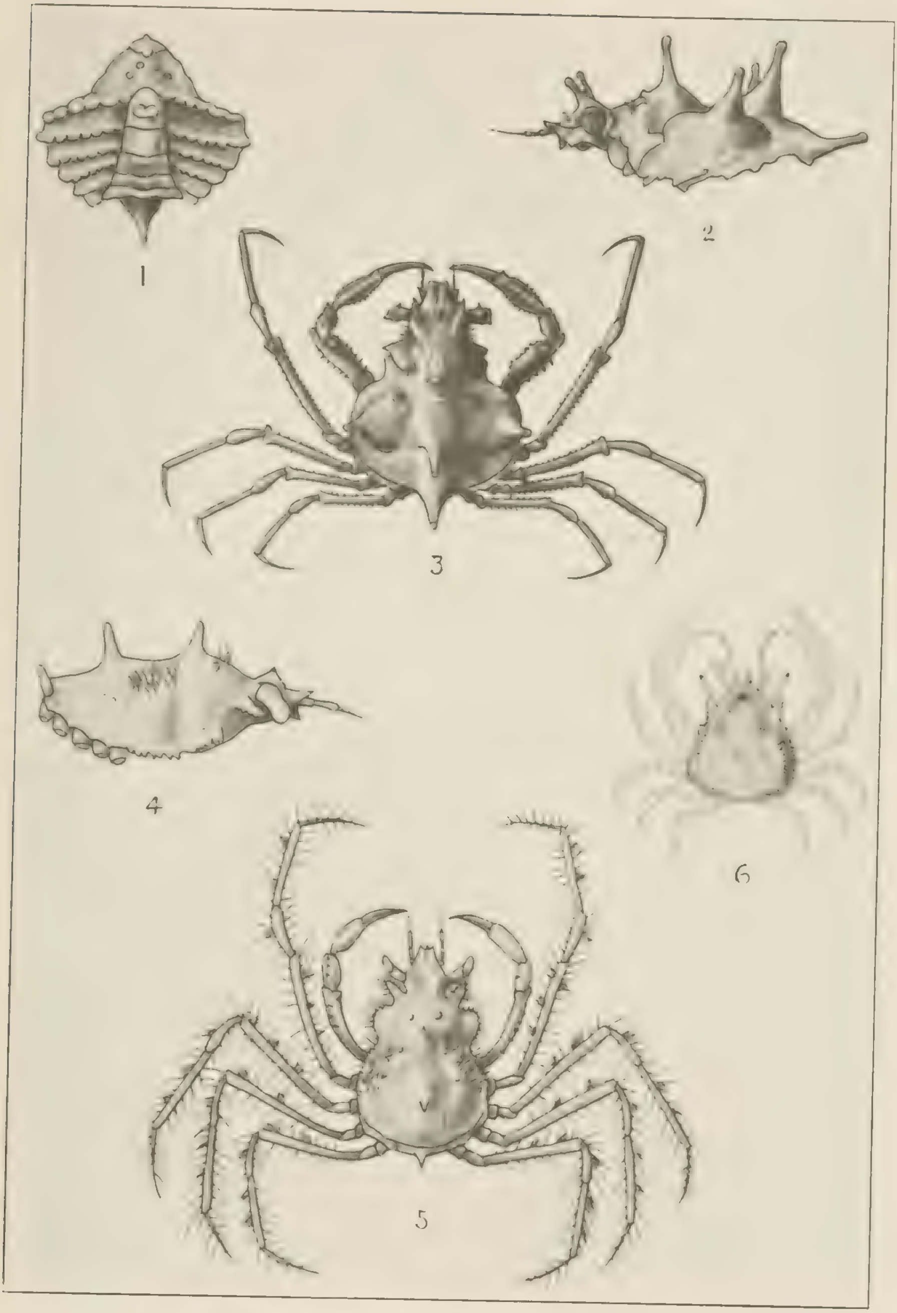
1. COLLODES GRANOSUS. (PAGE 106.) 2–5. C. OBESUS. (PAGE 109.) 6. C. ARMATUS. (PAGE 122)

FOR EXPLANATION OF PLATE SEE PAGE 586



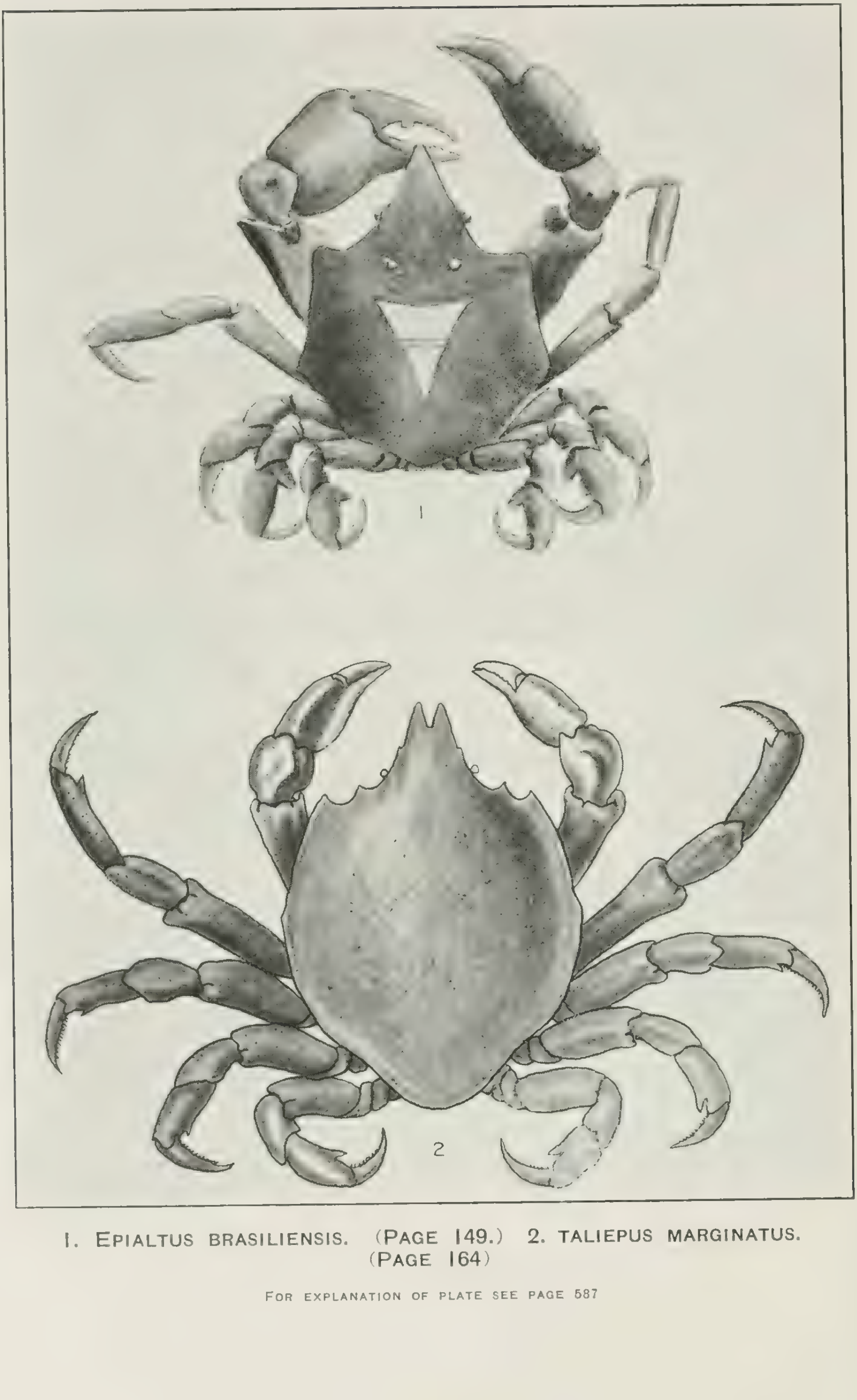
1–4. PYROMAIA TUBERCULATA. (PAGE 133.) 5. COLLODES TUMIDUS. (PAGE 121)

FOR EXPLANATION OF PLATE SEE PAGE 586



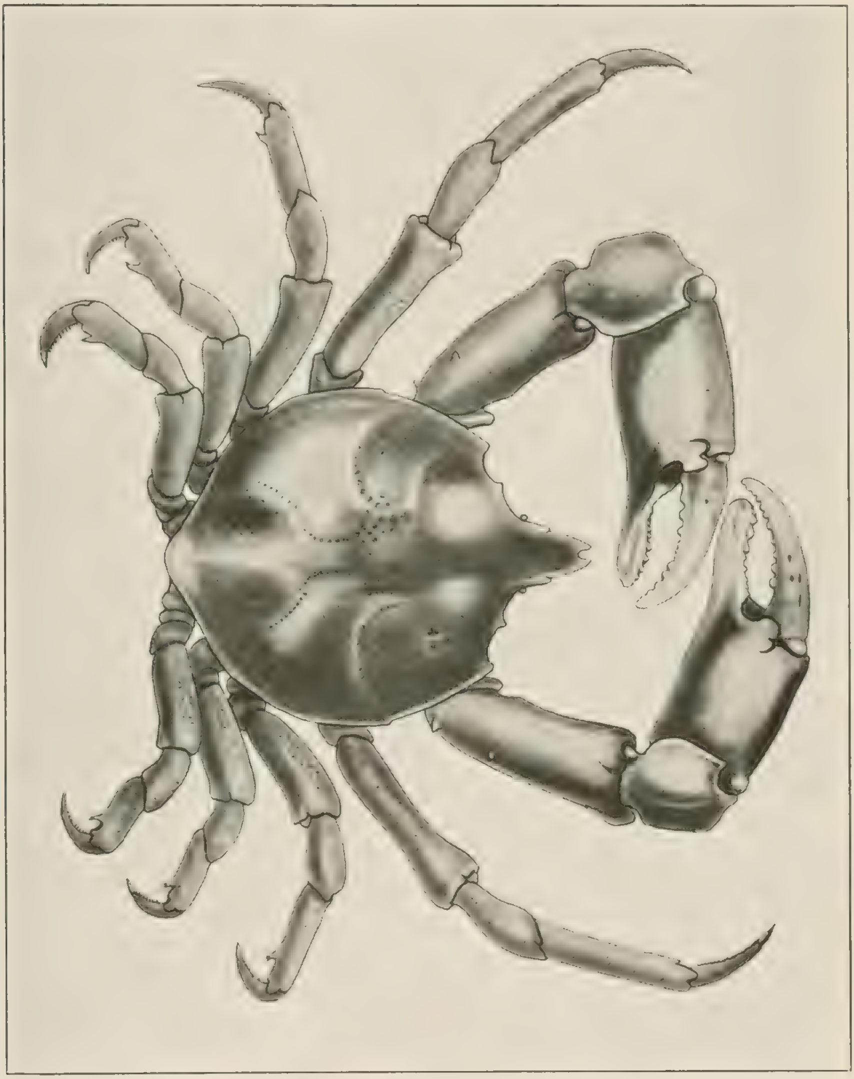
1–3. AEPINUS SEPTEMSPINOSUS. (PAGE 92.) 4, 5. ARACHNOPSIS FILIPES. (PAGE 89.) 6. EUCINETOPS RUBELLULA. (PAGE 86)

FOR EXPLANATION OF PLATE SEE PAGE 537



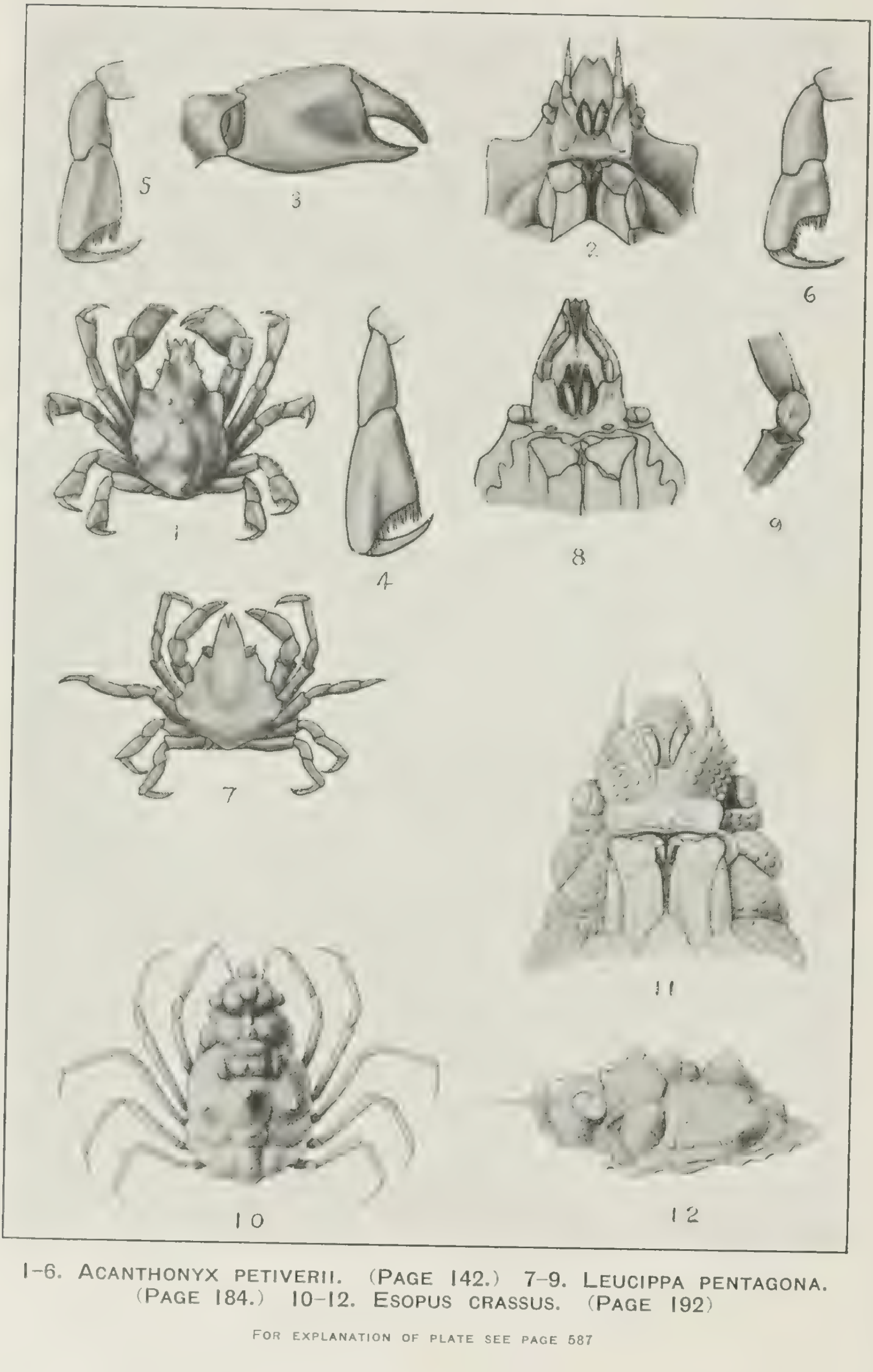
1. Epialtus brasiliensis. (Page 149.) 2. Taliepus marginatus. (Page 164)

For explanation of plate see page 587



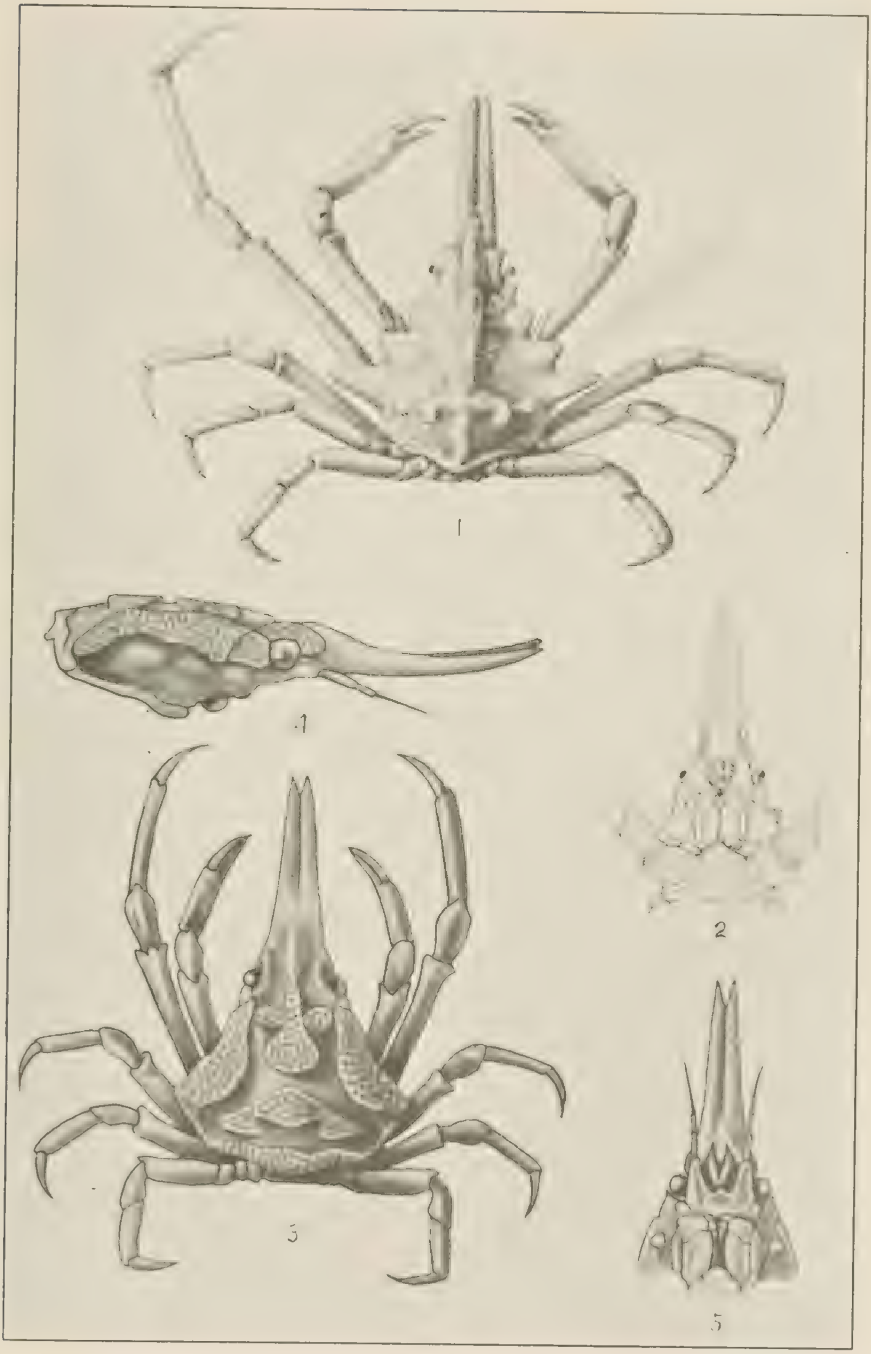
TALIEPUS MARGINATUS. (PAGE 164)

FOR EXPLANATION OF PLATE SEE PAGE 687



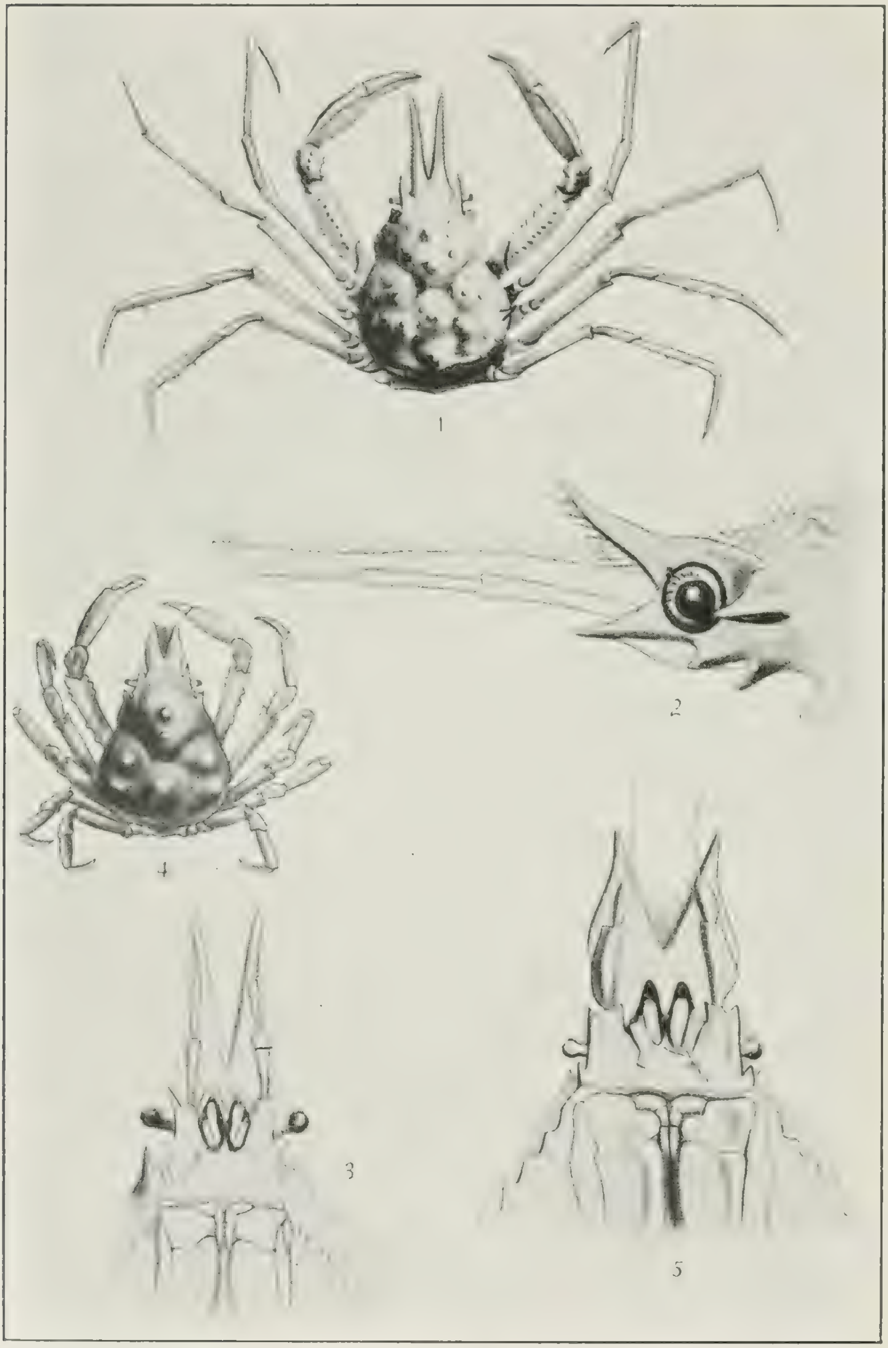
1–6. Acanthonyx petiverii. (Page 142.) 7–9. Leucippa pentagona. (Page 184.) 10–12. Esopus crassus. (Page 192)

For explanation of plate see page 587



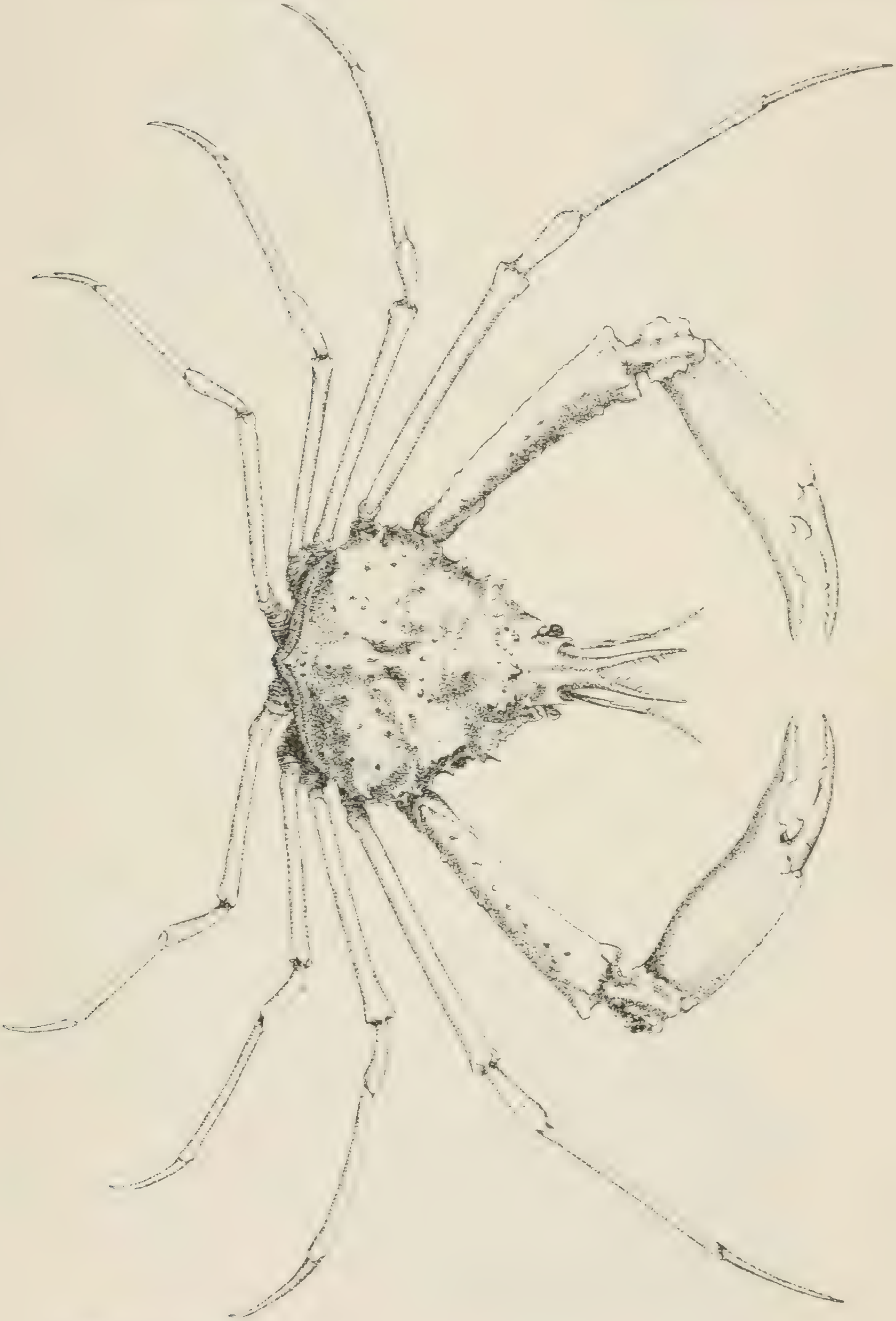
1, 2. SPHENOCARCINUS AGASSIZI. (PAGE 188.) 3–5. S. CORROSUS. (PAGE 187)

FOR EXPLANATION OF PLATE SEE PAGE 587



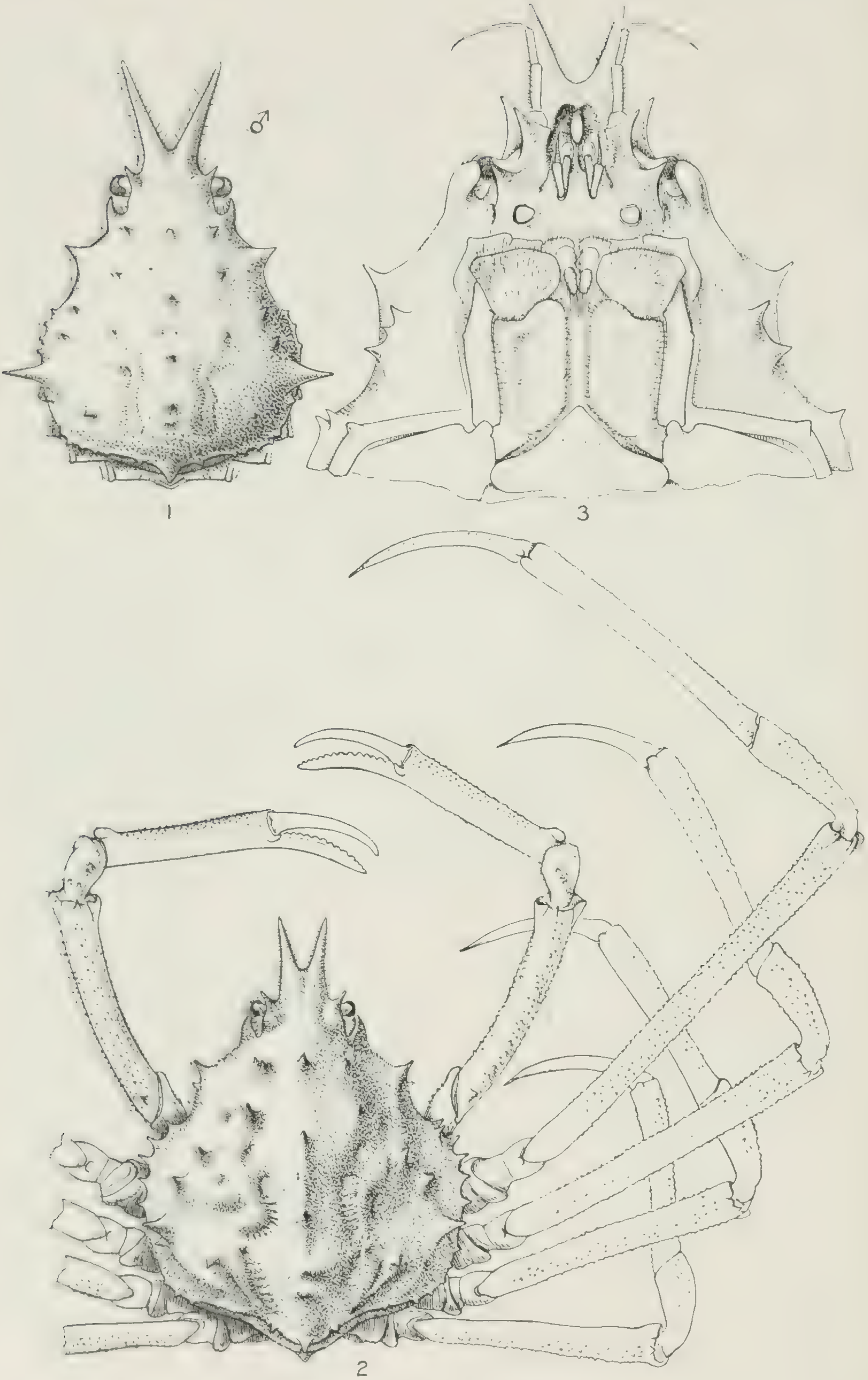
1–3. Chorilia longipes. (Page 203.) 4, 5. Scyra acutifrons. (Page 195)

For explanation of plate see page 588



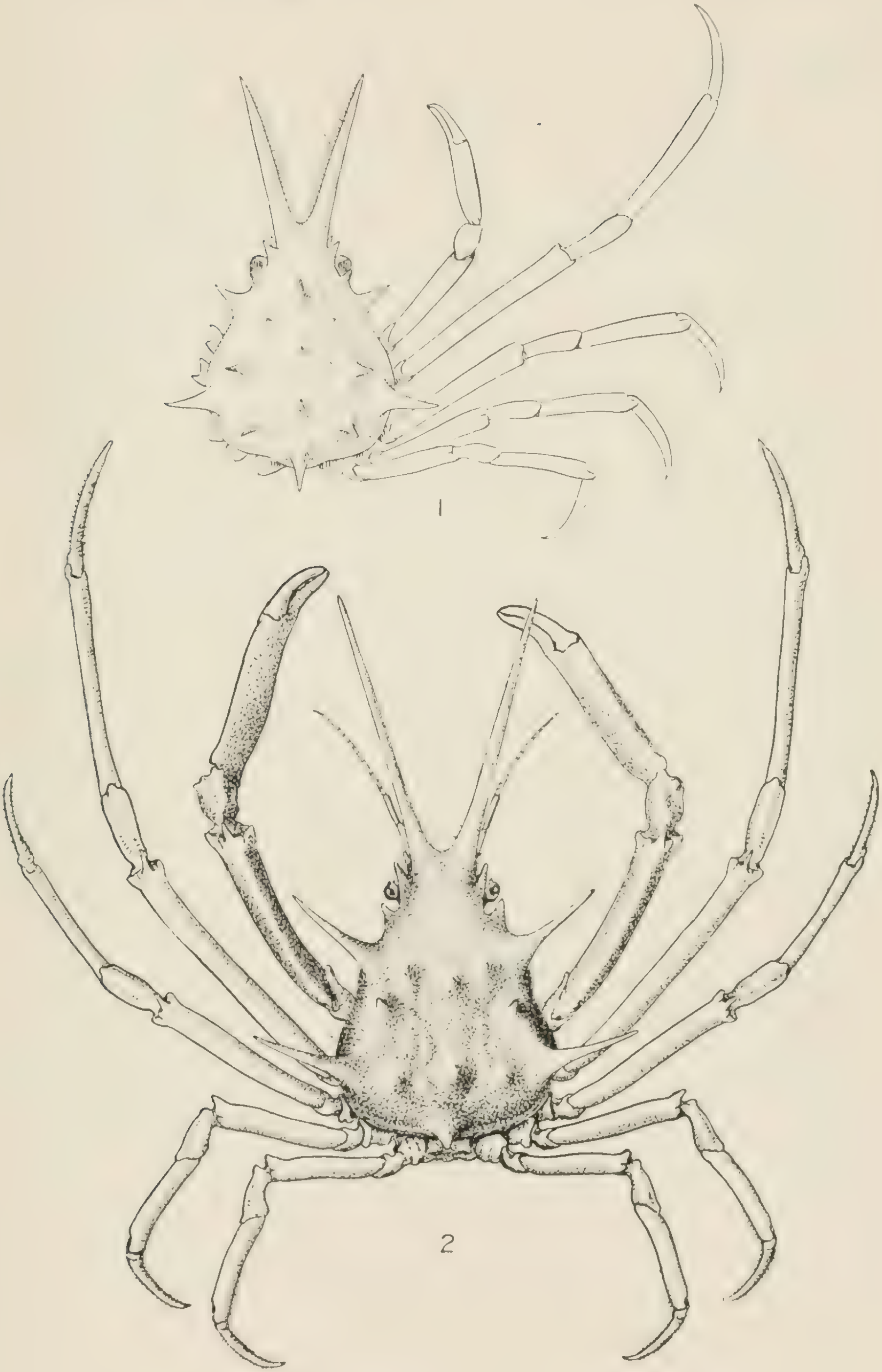
CHORILIA LONGIPES TURGIDA. (PAGE 203)

FOR EXPLANATION OF PLATE SEE PAGE 588



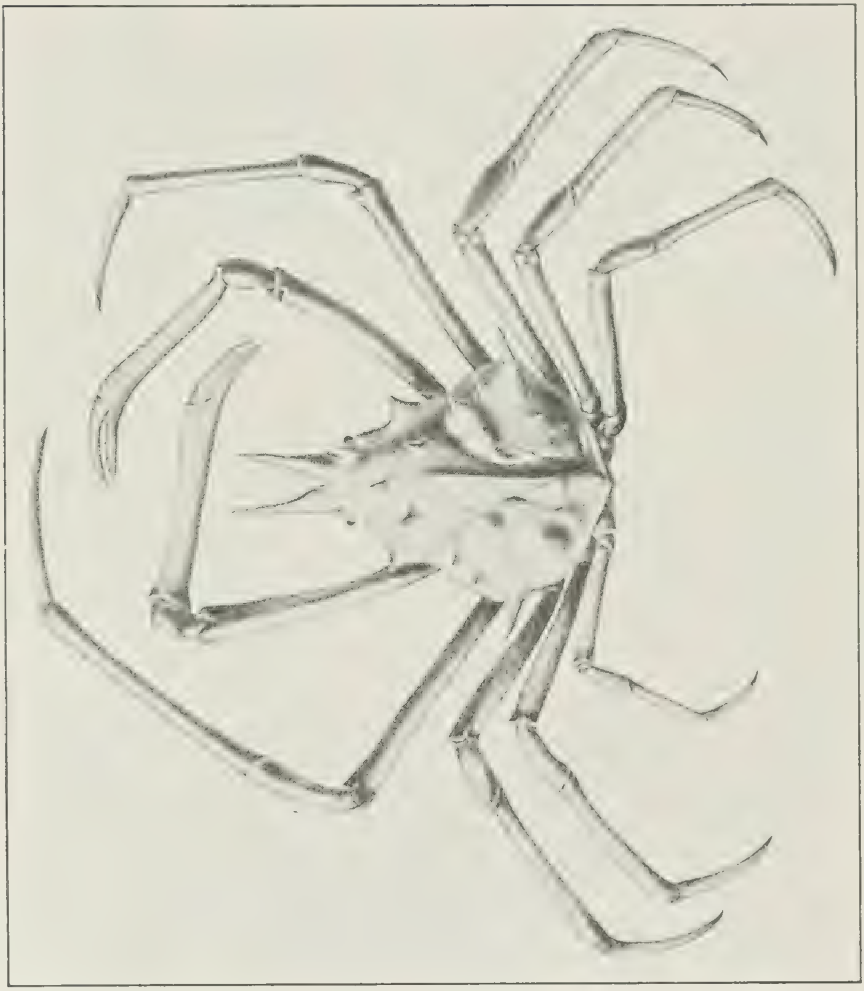
Rochinia crassa. (Page 210)

For explanation of plate see page 588



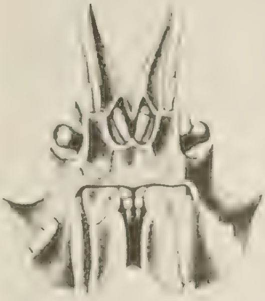
1. ROCHINIA TANNERI. (PAGE 216.) 2. R. CORNUTA. (PAGE 217)

FOR EXPLANATION OF PLATE SEE PAGE 688



Rochinia occidentalis. (Page 220)

For explanation of plate see page 683



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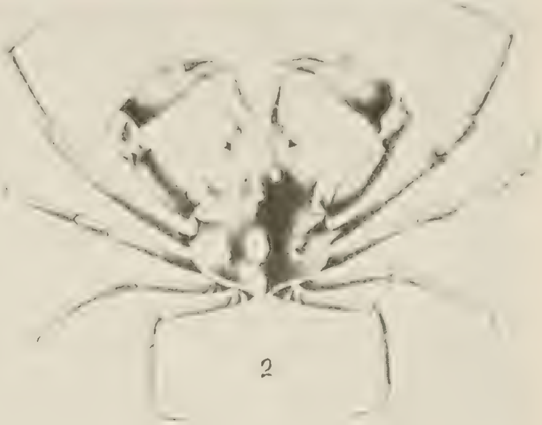

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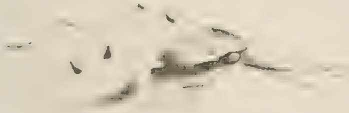

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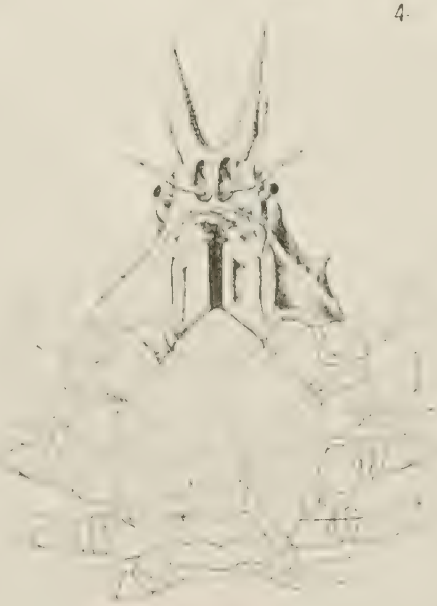

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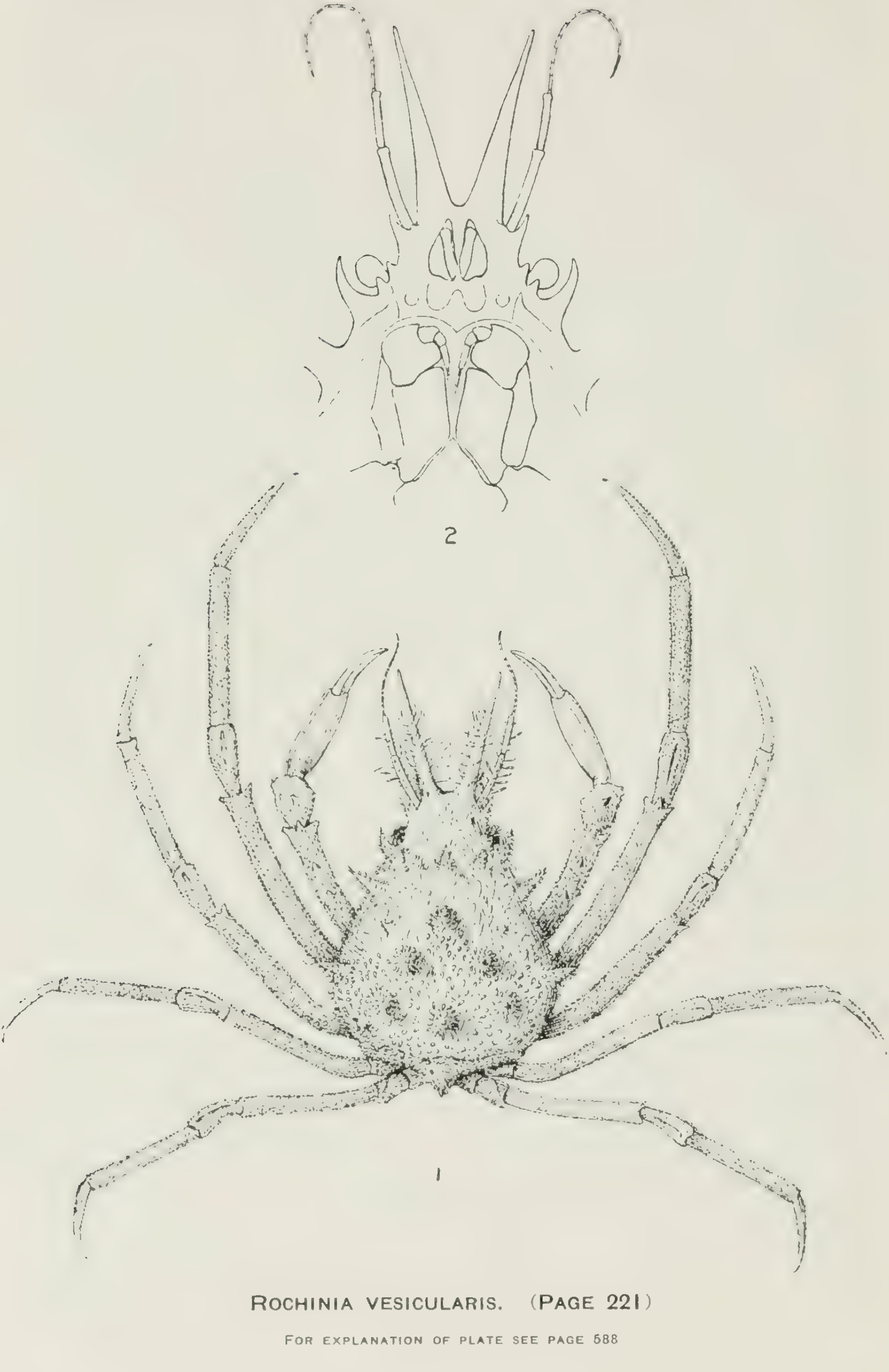
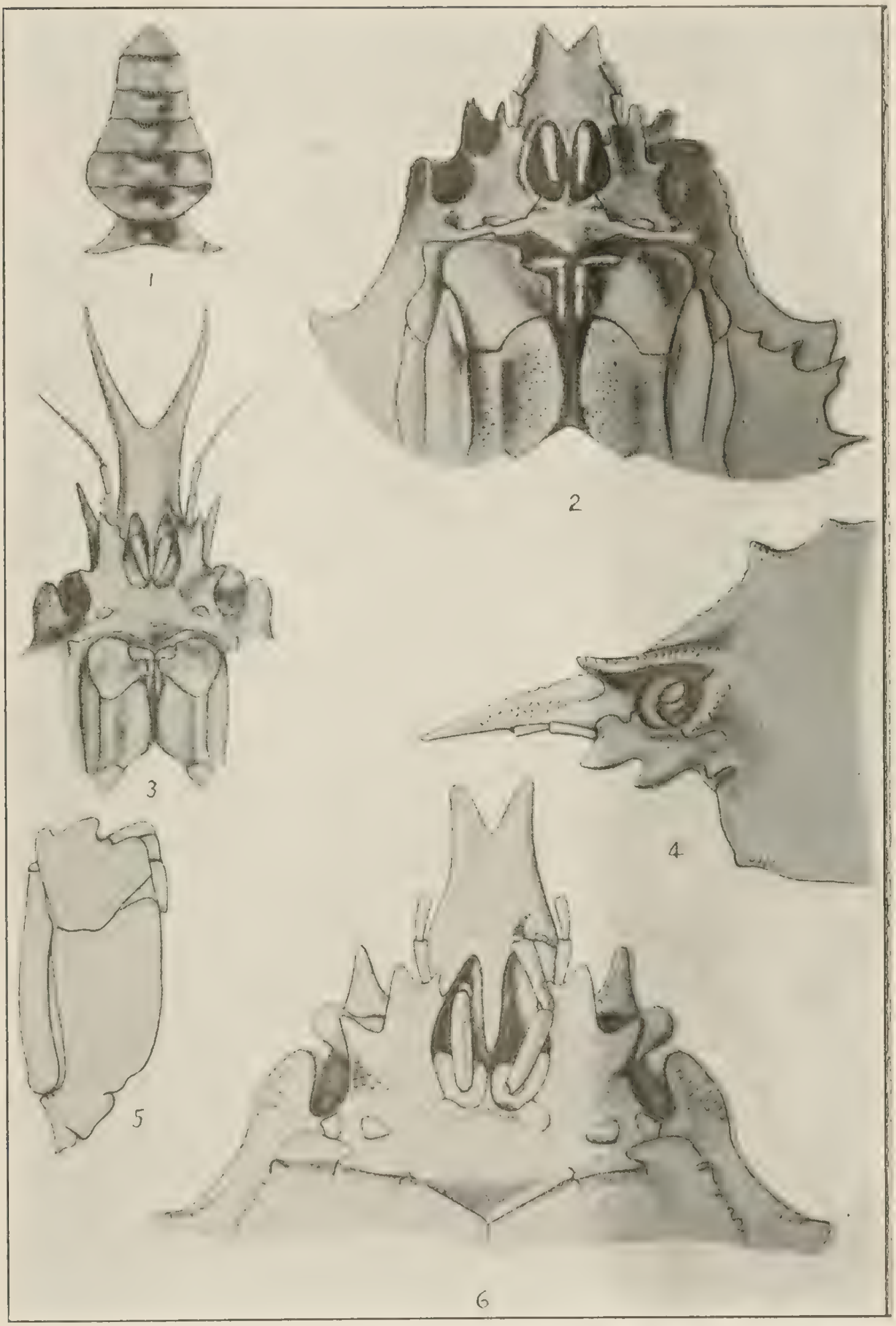
1–4. Rochinia gracilipes. (Page 218.) 5. R. occidentalis. (Page 220)

For explanation of plate see page 538



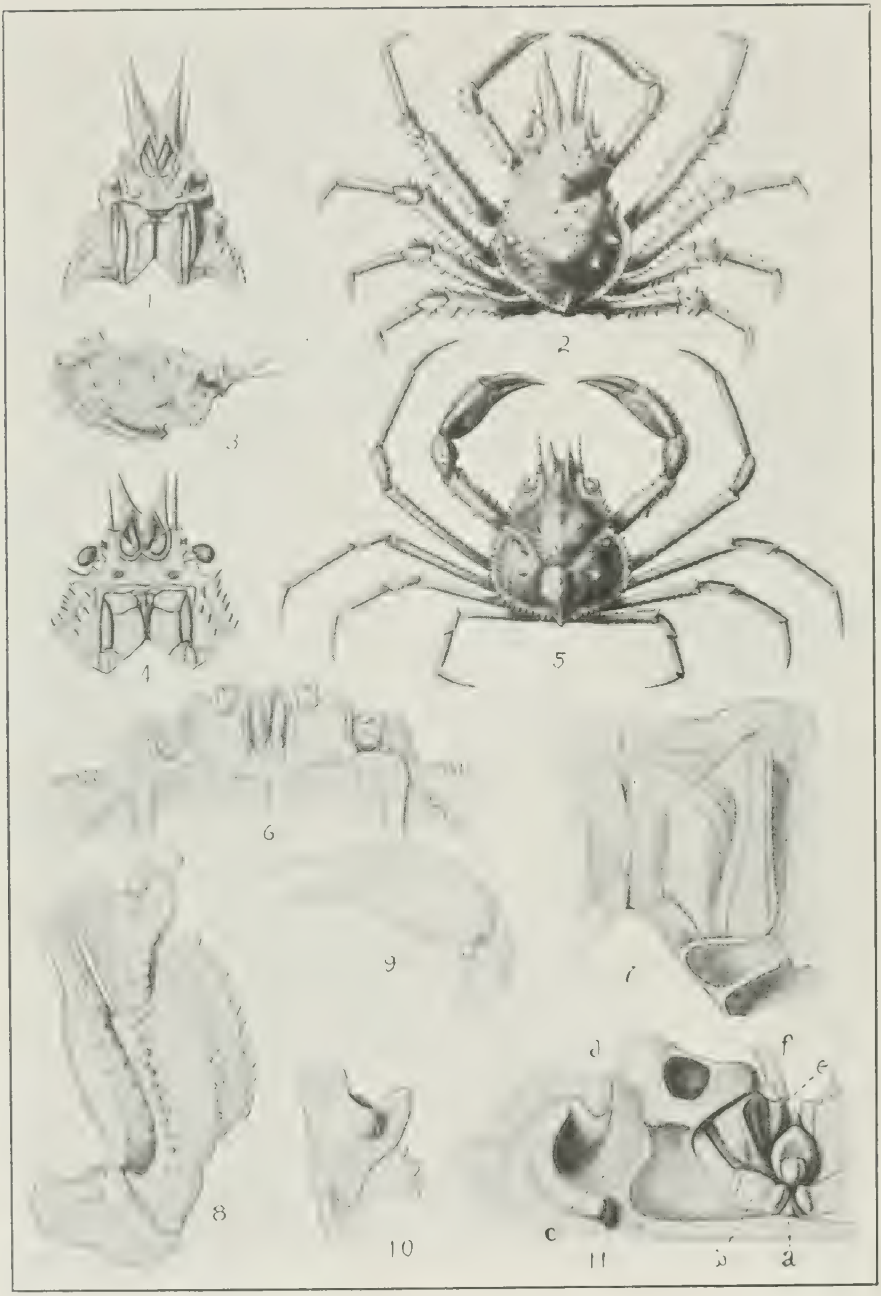
Rochinia vesicularis. (Page 221)

For explanation of plate see page 588



1, 2, 4–6. LIBIDOCLAEA GRANARIA. (PAGE 224.) 3. L. SMITHII. (PAGE 226.)

FOR EXPLANATION OF PLATE SEE PAGES 588 AND 559.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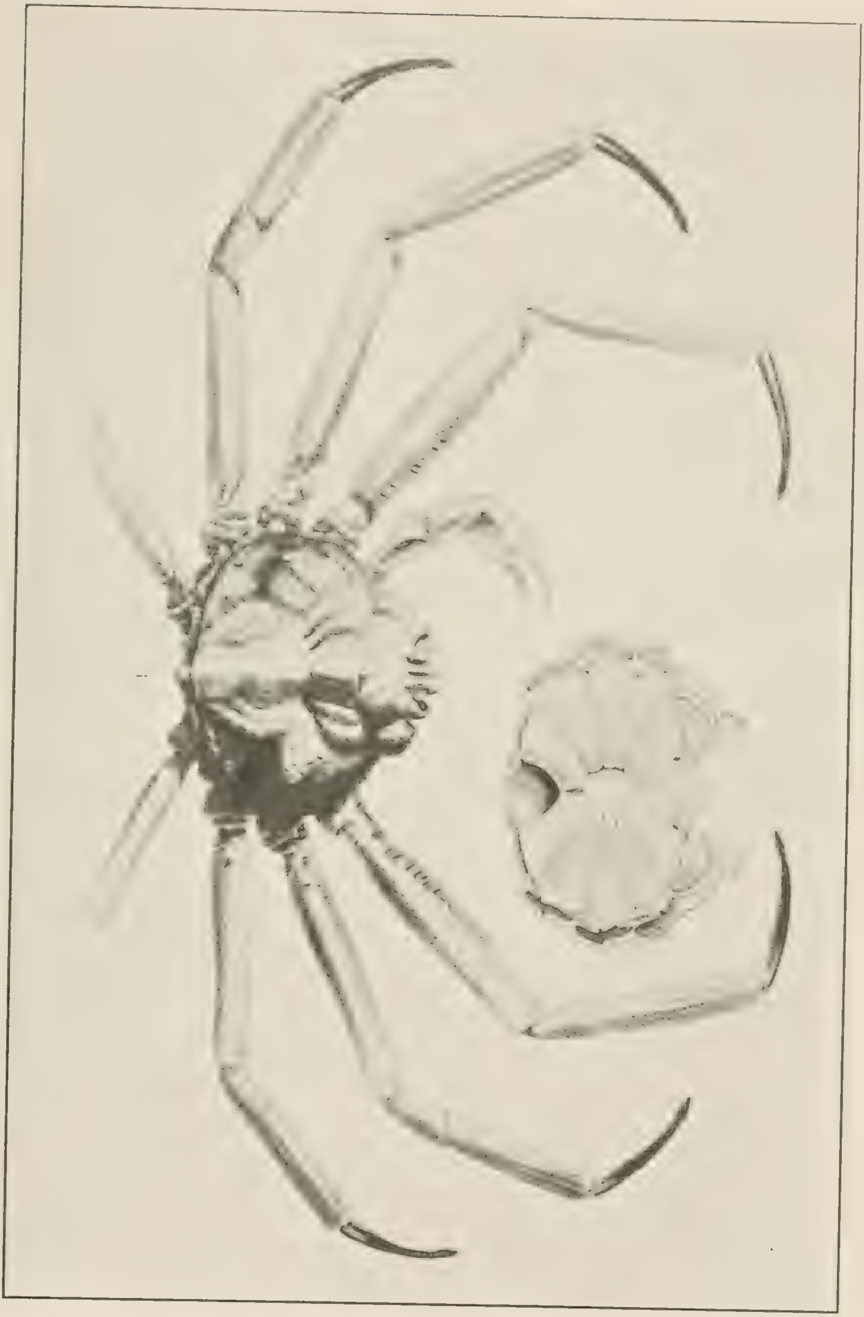
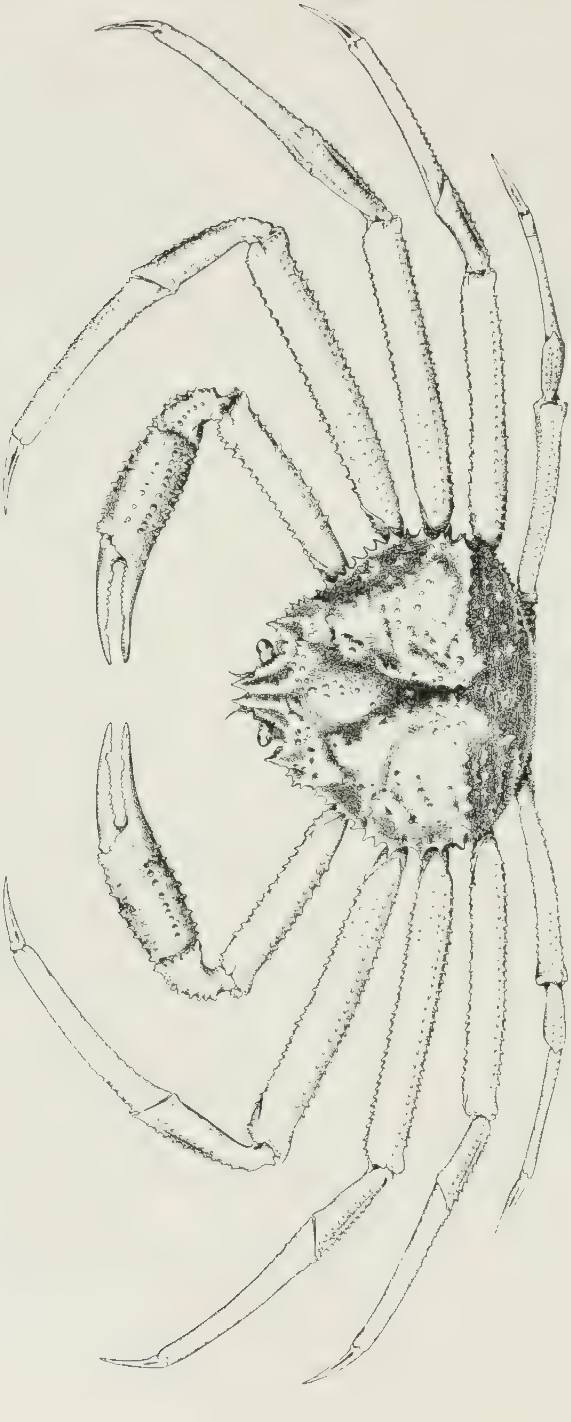
1, 2. Oplopisa spinipes. (Page 228.) 3–5. Trachymaia cornuta. (Page 229.) 6–11. Leurocyclus tuberculosus. (Page 230)

For explanation of plate see page 589



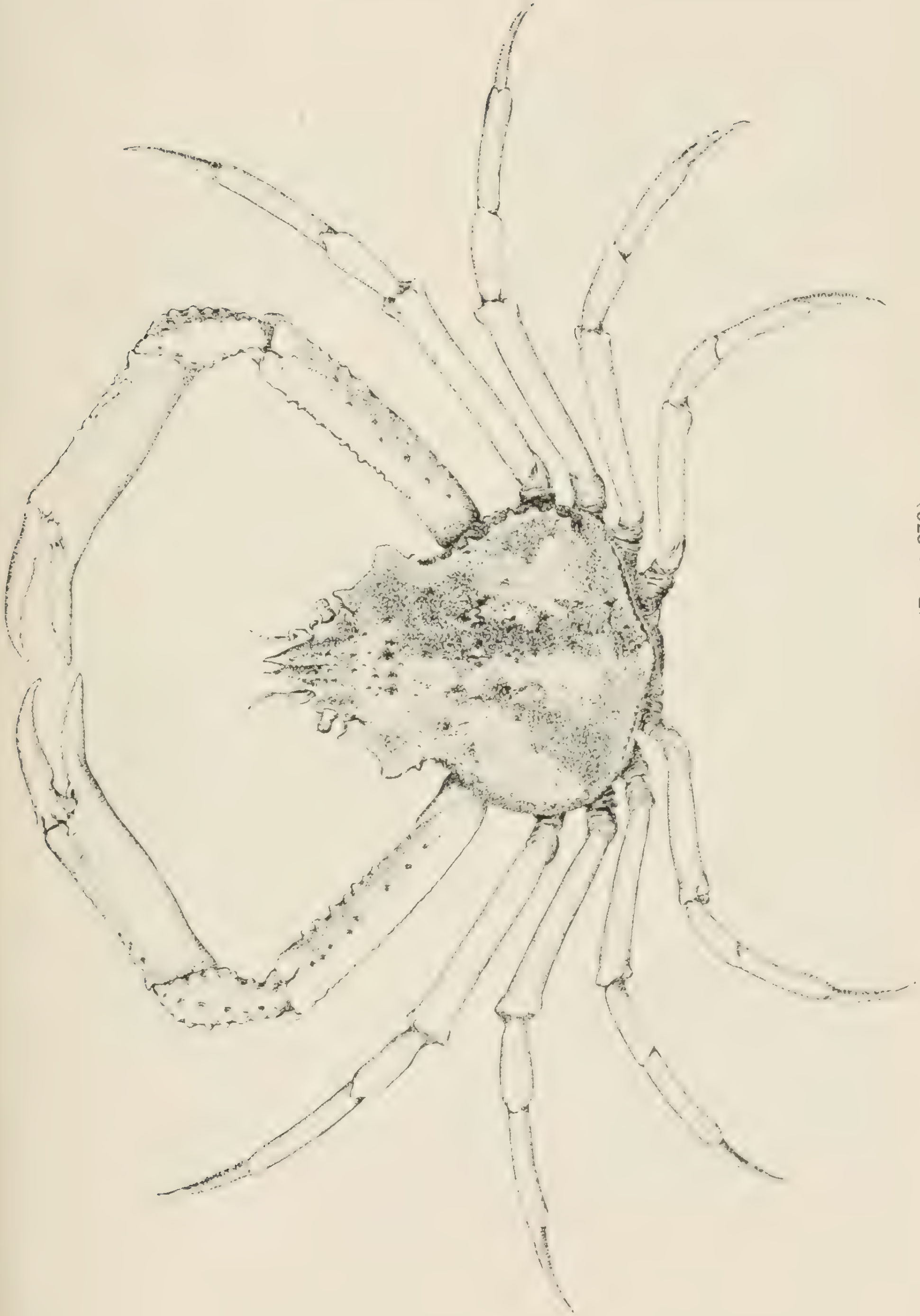
LEUROCYCLUS TUBERCULOSUS. (PAGE 230)

FOR EXPLANATION OF PLATE SEE PAGE 689



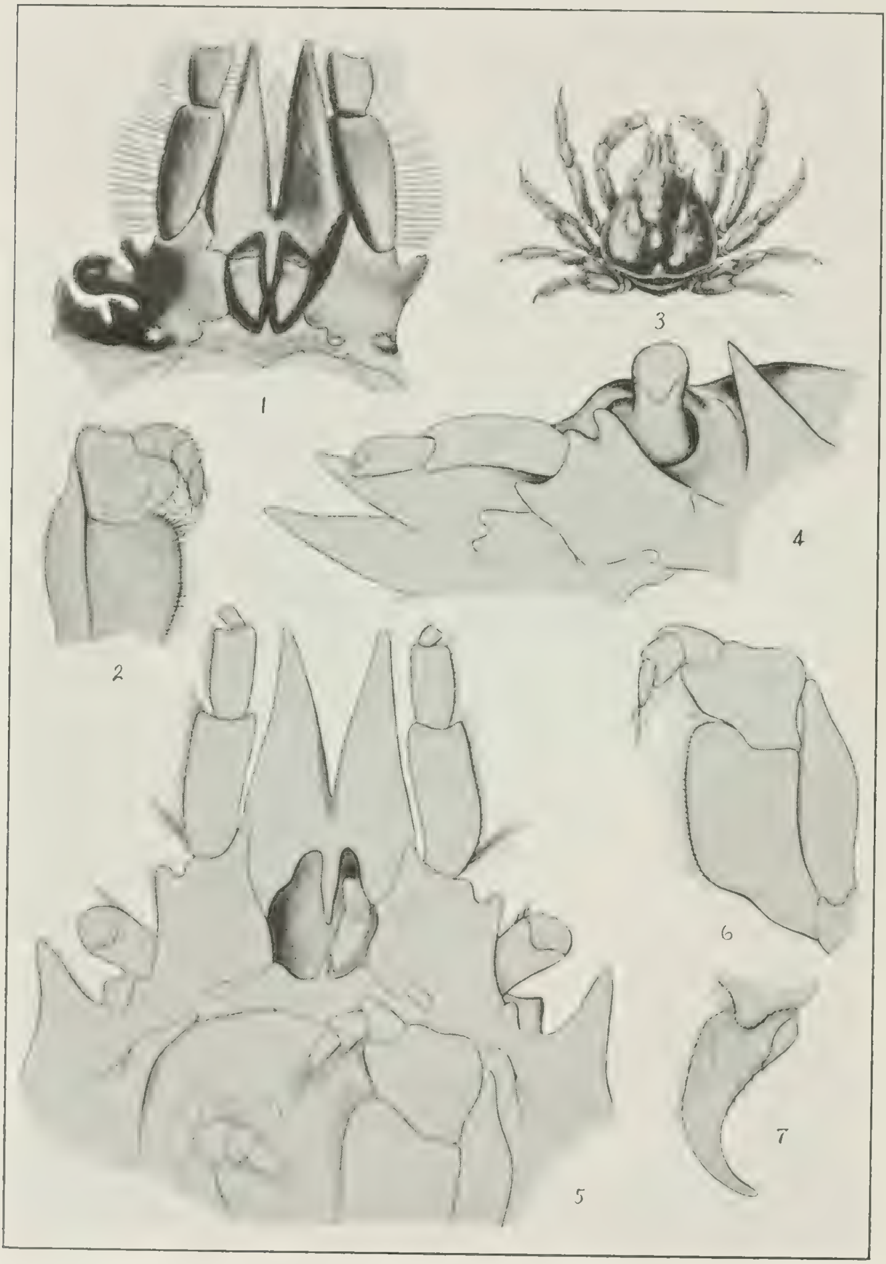
Chionoecetes tanneri. (Page 243)

For explanation of plate see page 589



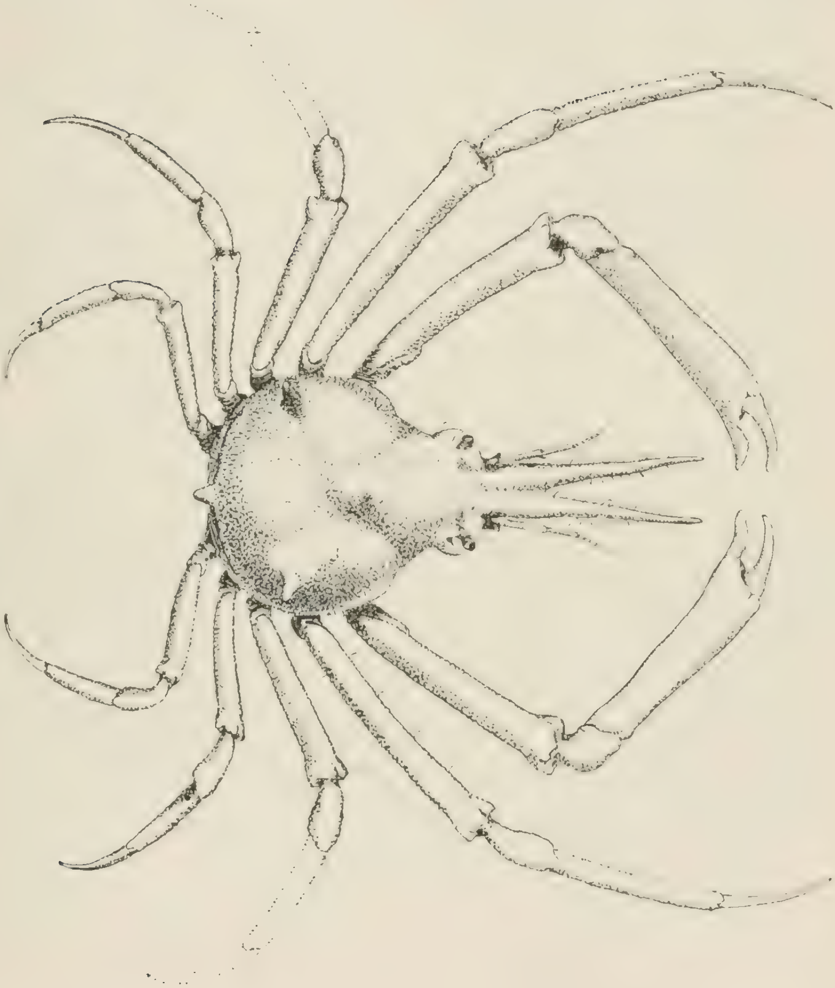
HYAS LYRATUS. (PAGE 270)

FOR EXPLANATION OF PLATE SEE PAGE 589



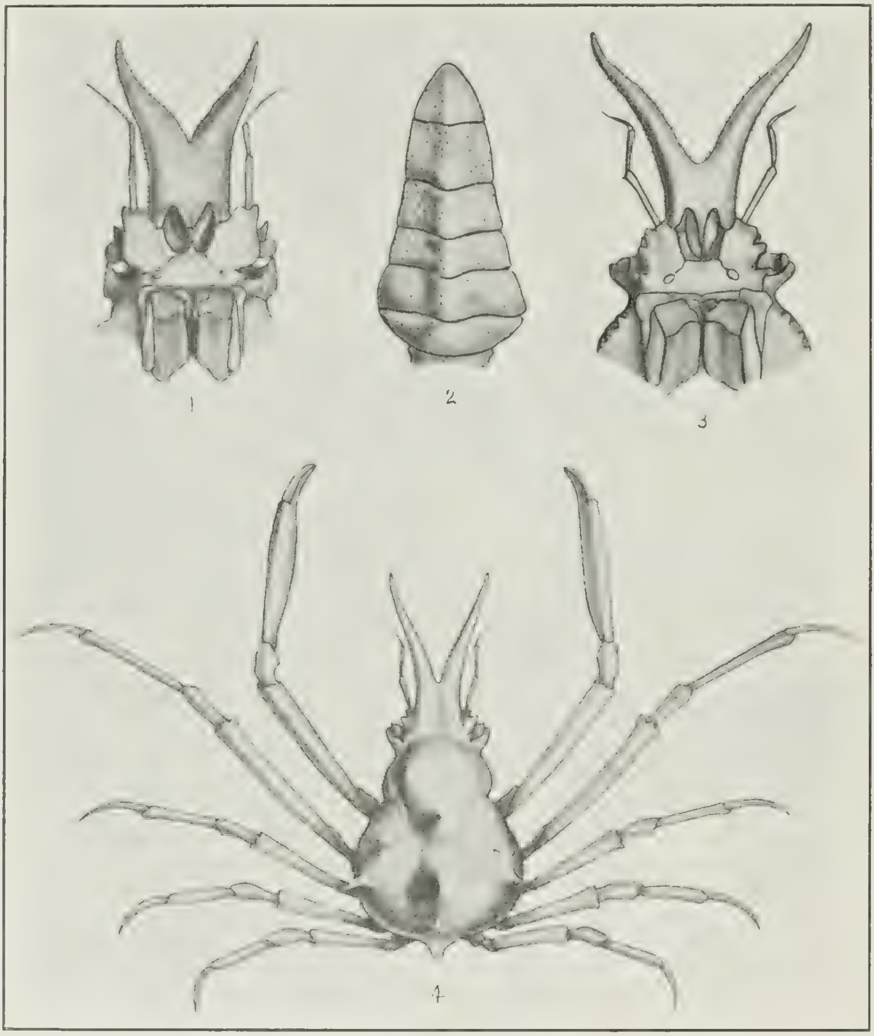
PISOIDES EDWARDSII. (PAGE 285)

FOR EXPLANATION OF PLATE SEE PAGE 589



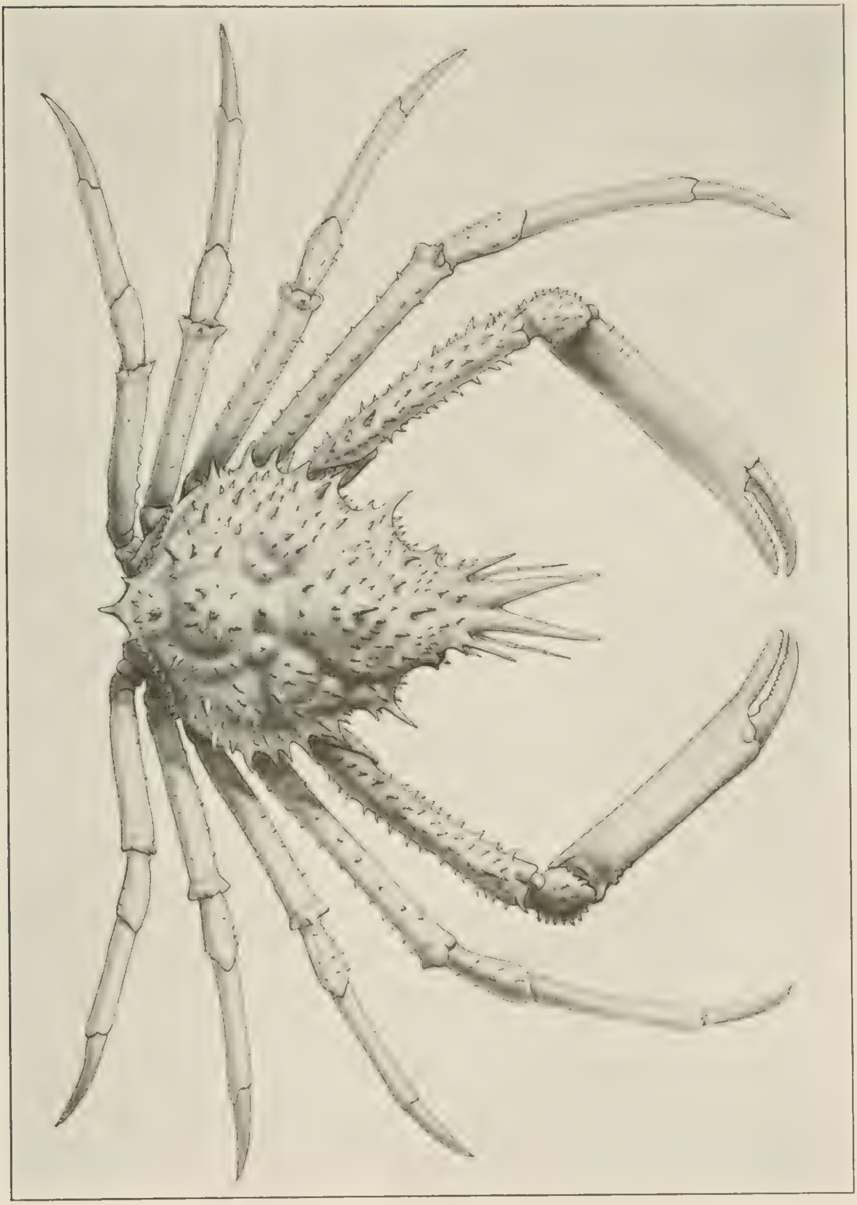
NOTOLOPAS BRASILIENSIS. (PAGE 288)

FOR EXPLANATION OF PLATE SEE PAGE 590



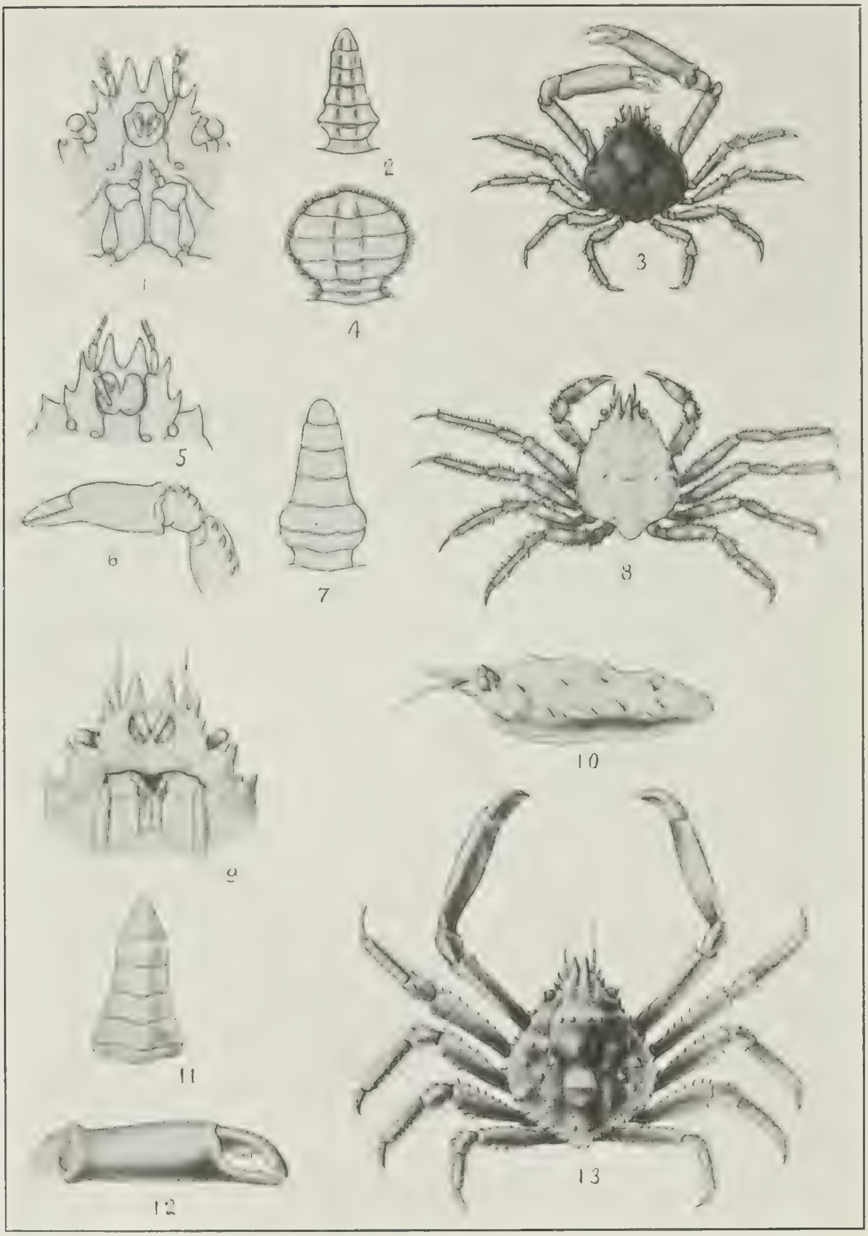
1. Notolopas lamellatus. (Page 287.) 2–4. N. brasiliensis. (Page 288)

For explanation of plate see page 590



NIBILIA ANTILOCAPRA. (PAGE 290)

FOR EXPLANATION OF PLATE SEE PAGE 590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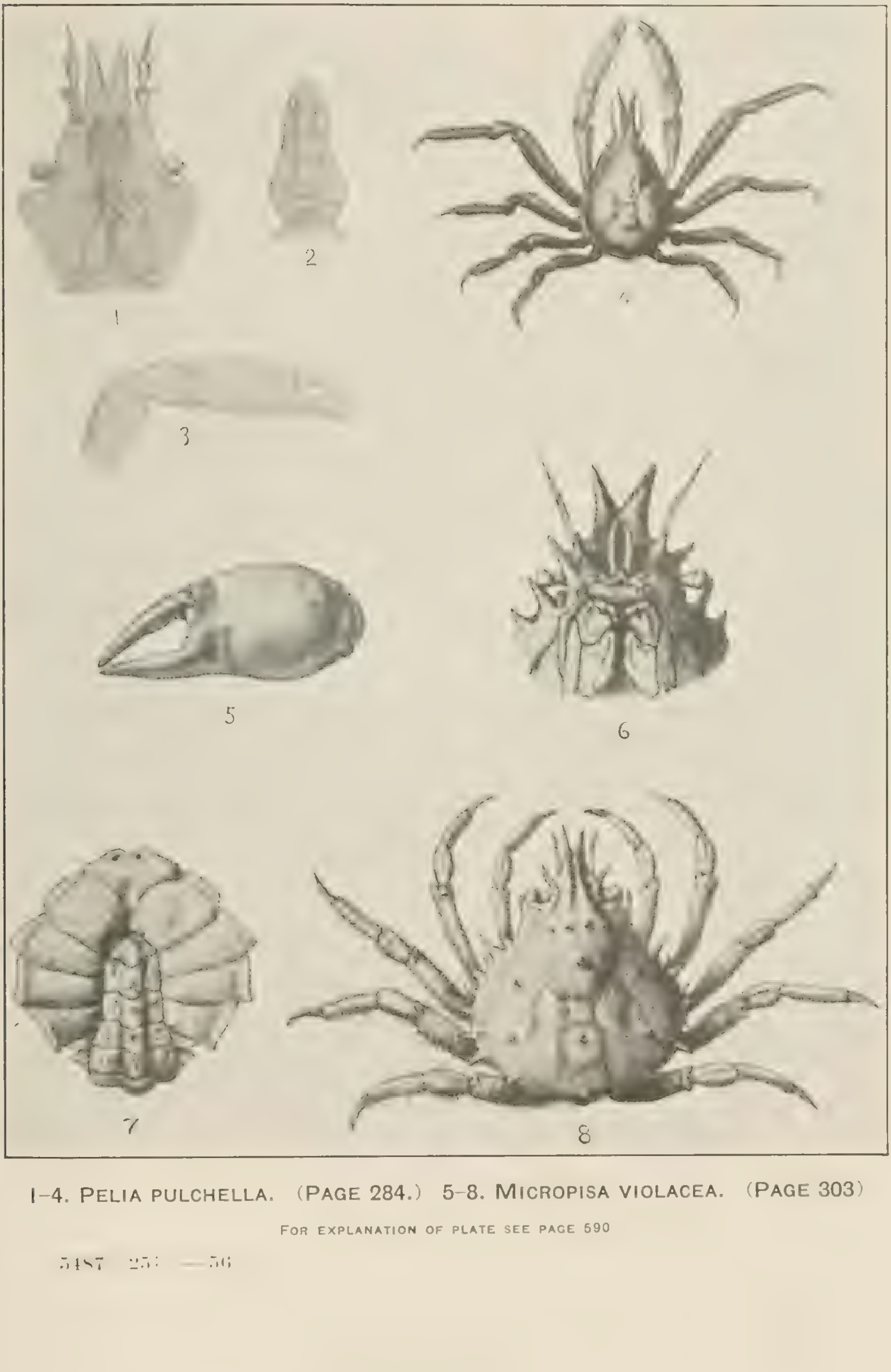
1–4. Herbstia edwardsii. (Page 300.) 5–8. H. pyriformis. (Page 301.) 9–13. H. camptacantha. (Page 294.)

For explanation of plate see page 590



1–4. PELIA PULCHELLA. (PAGE 284.) 5–8. MICROPISA VIOLACEA. (PAGE 303)

FOR EXPLANATION OF PLATE SEE PAGE 590

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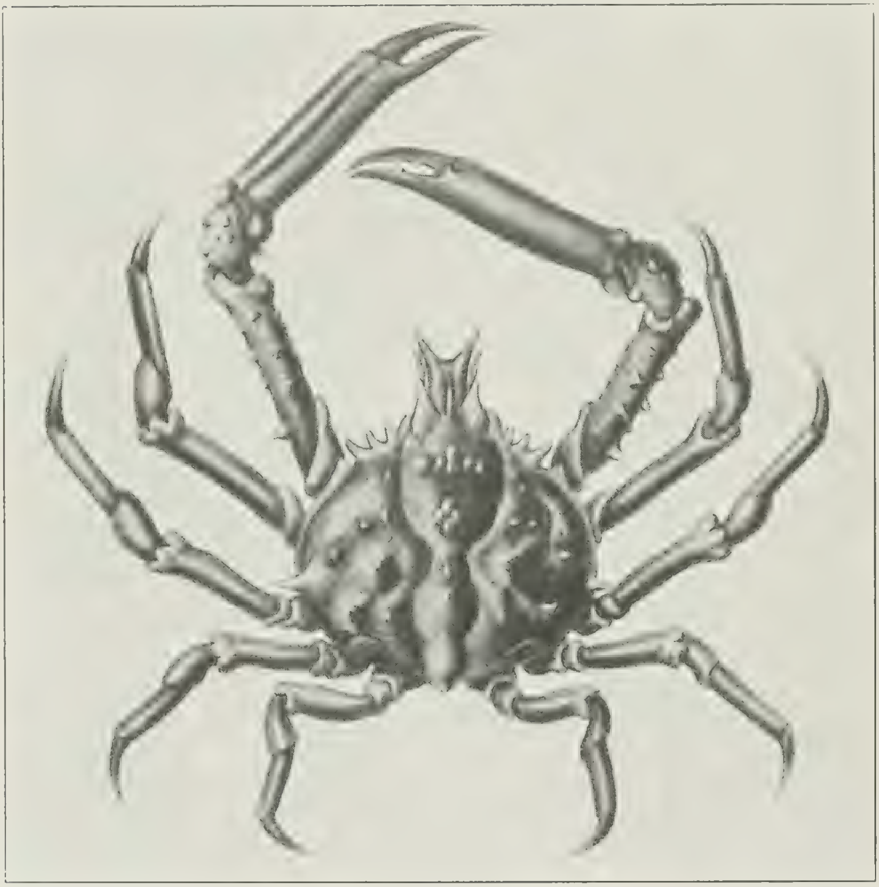
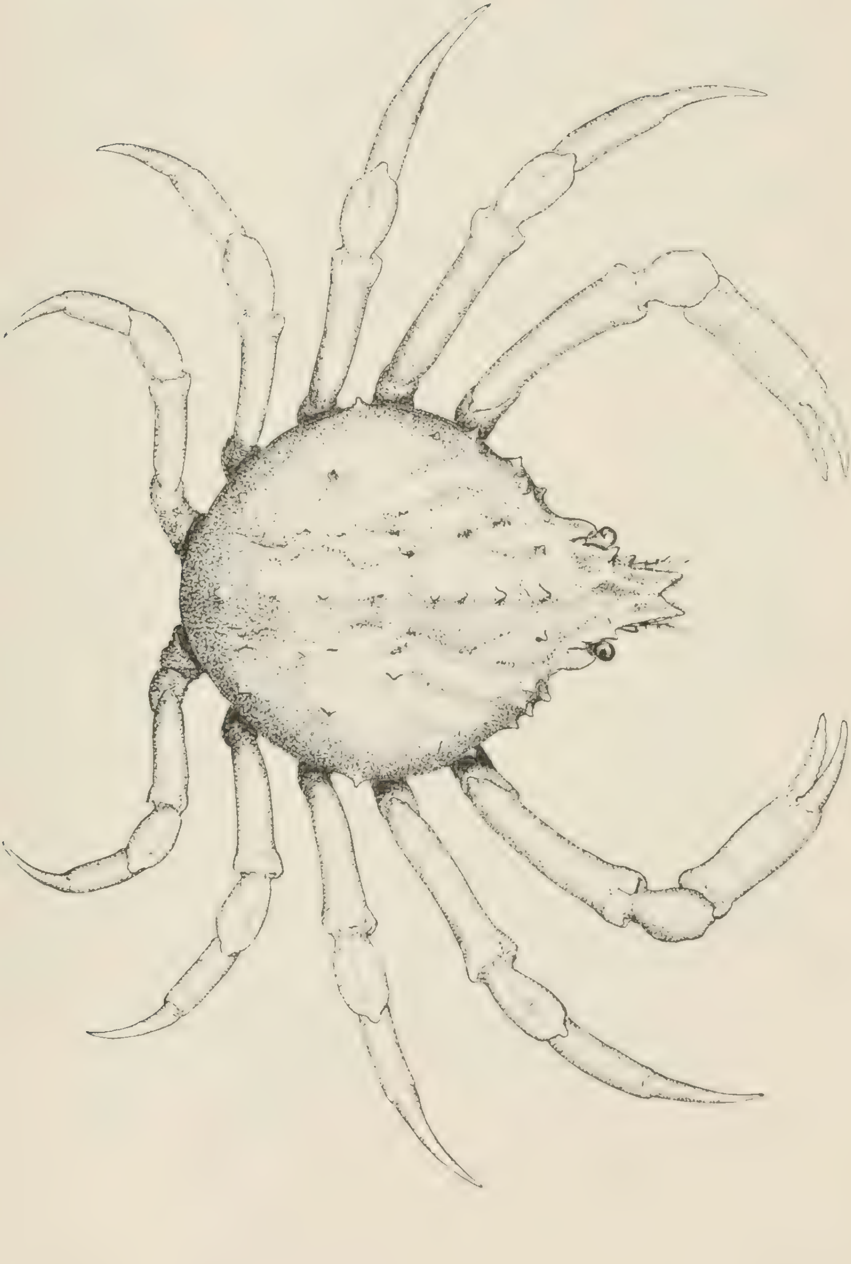


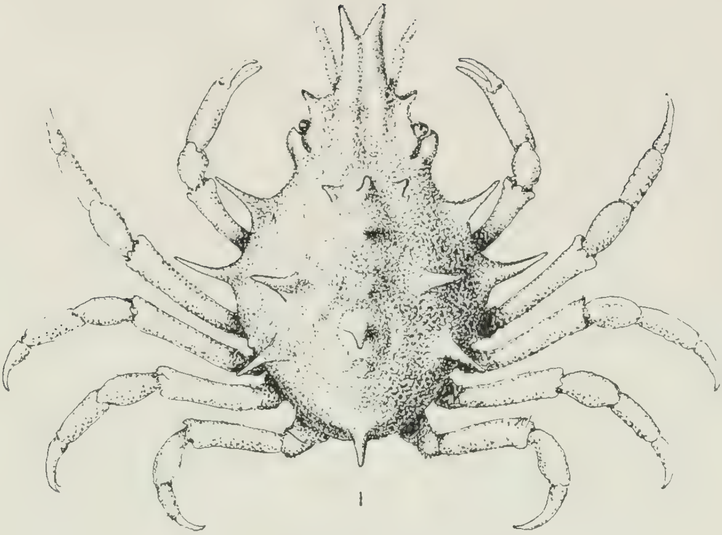
Libinia rostrata. (Page 329)

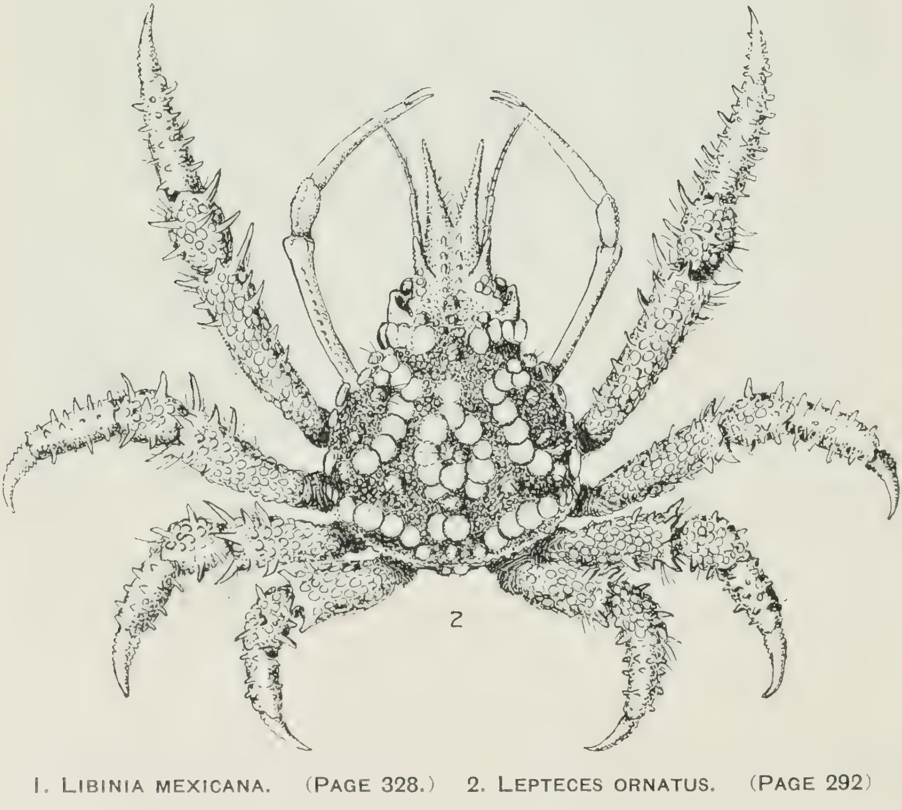
For explanation of plate see page 591



LIBINIA SETOSA. (PAGE 327)

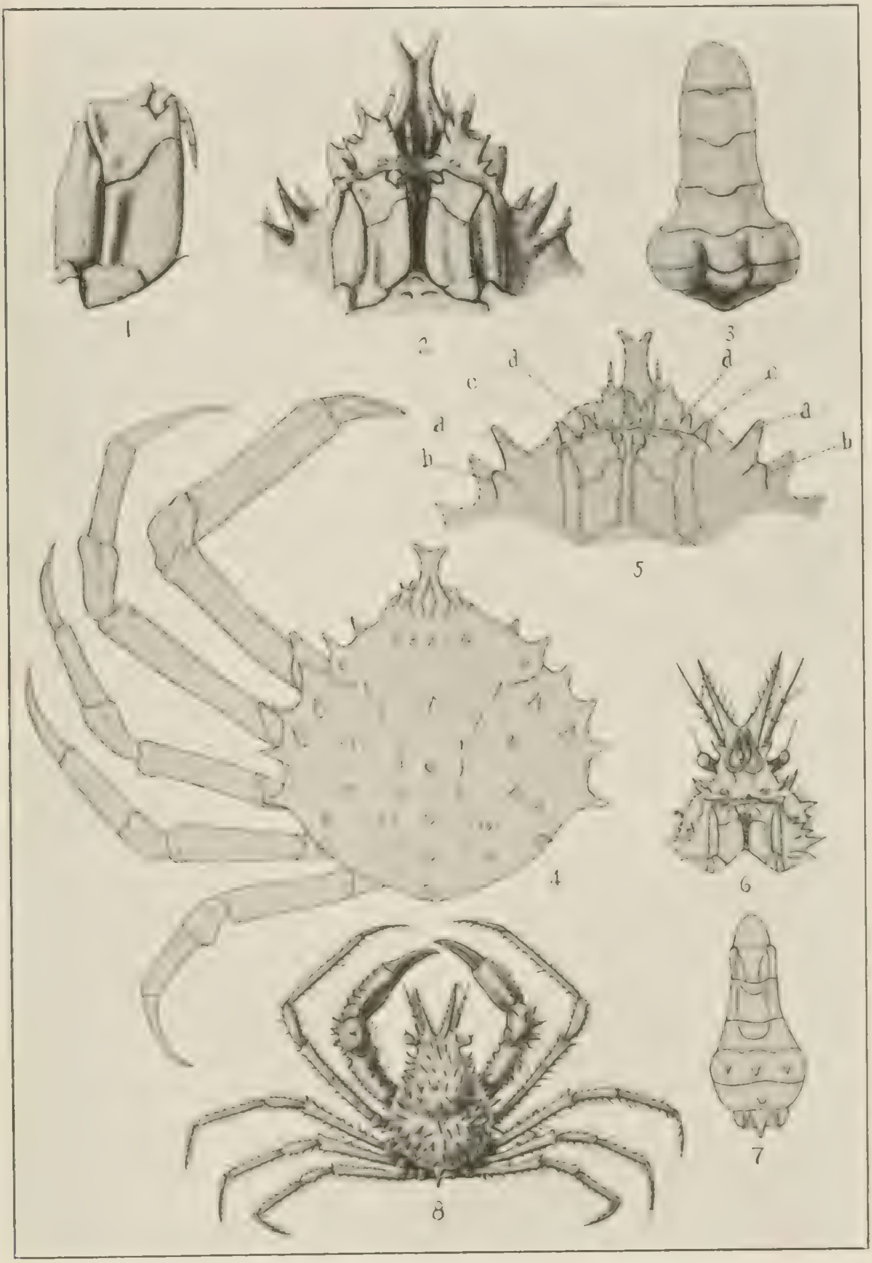
FOR EXPLANATION OF PLATE SEE PAGE 591





1. LIBINIA MEXICANA. (PAGE 328.) 2. LEPTECES ORNATUS. (PAGE 292)

FOR EXPLANATION OF PLATE SEE PAGE 591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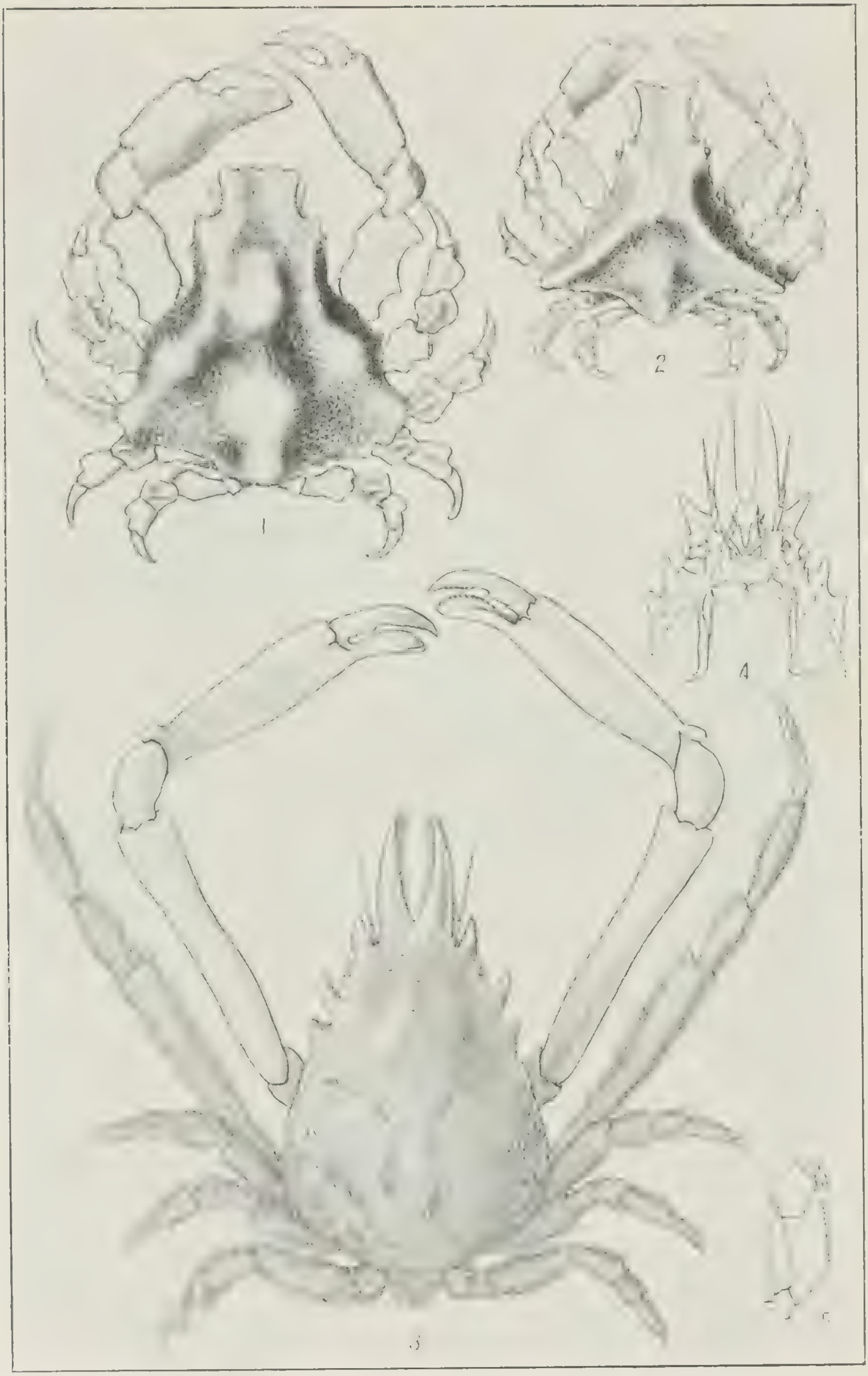
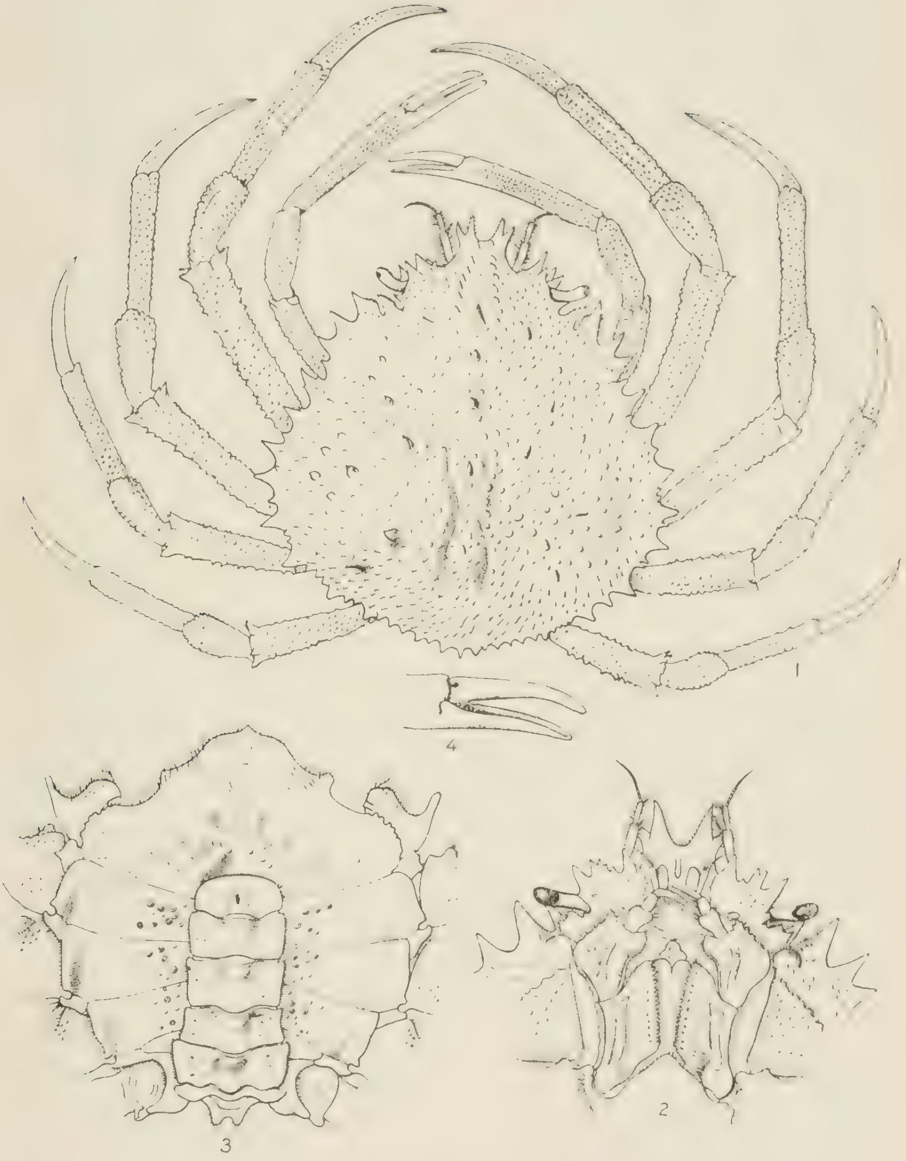
1–3. LIBINIA RHOMBOIDEA. (PAGE 323.) 4, 5. L. FERREIRAE. (PAGE 324.) 6–8. HOLOPLITES ARMATA. (PAGE 307)

FOR EXPLANATION OF PLATE SEE PAGE 531



1. Lissa tuberosa. (Page 333.) 2. L. aurivilliusi. (Page 333.)
3–5. Chorinus heros. (Page 305)

For explanation of plate see page 591



MAIOPSIS PANAMENSIS. (PAGE 338)

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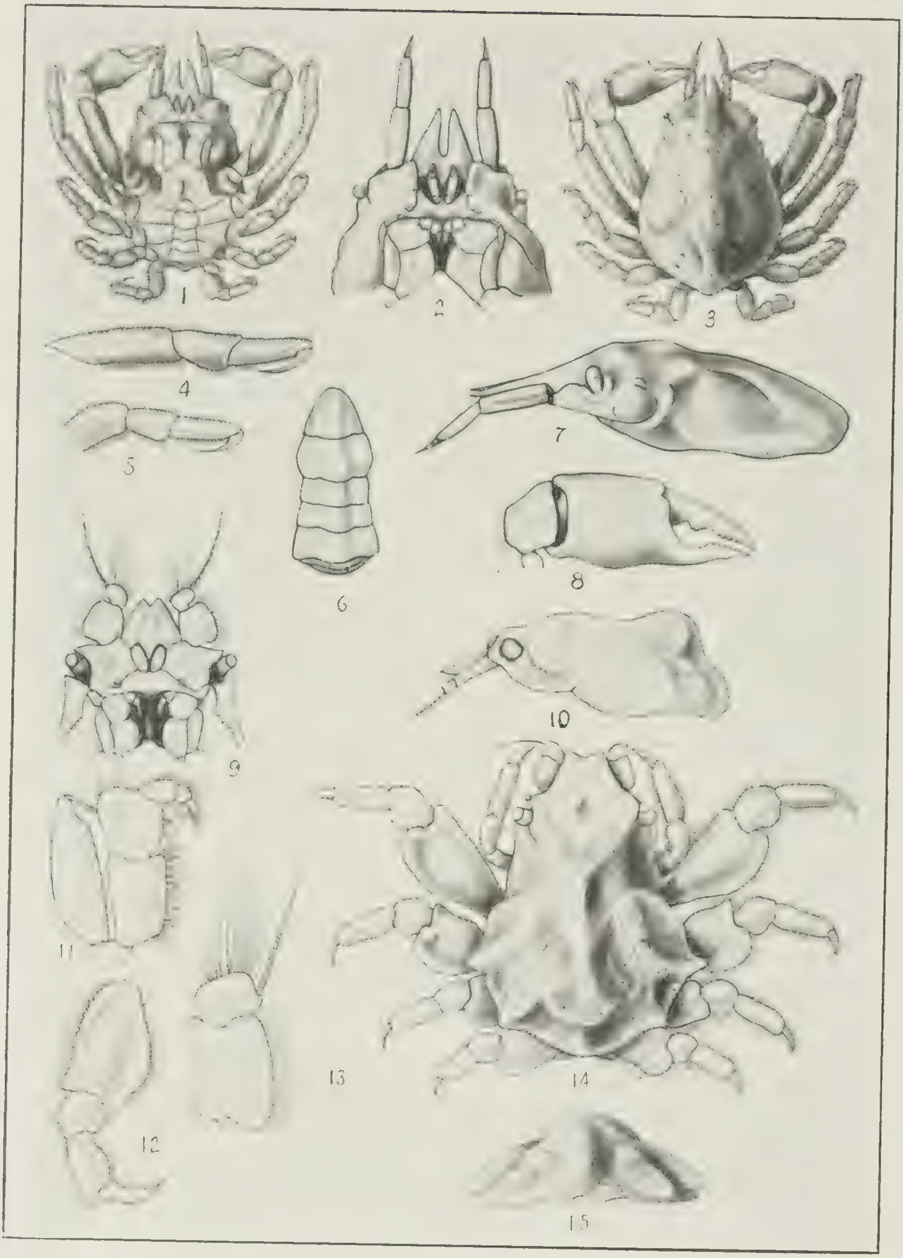
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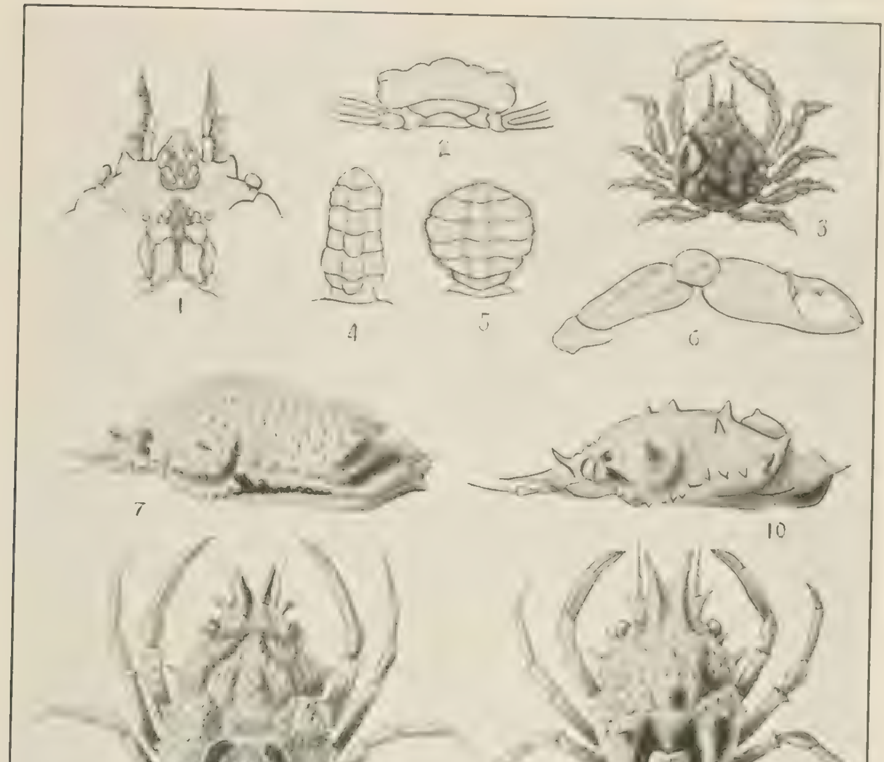
1–8. THERSANDRUS COMPRESSUS. (PAGE 343.) 9–15. HEMUS CRISTULIPES. (PAGE 345)

FOR EXPLANATION OF PLATE SEE PAGE 592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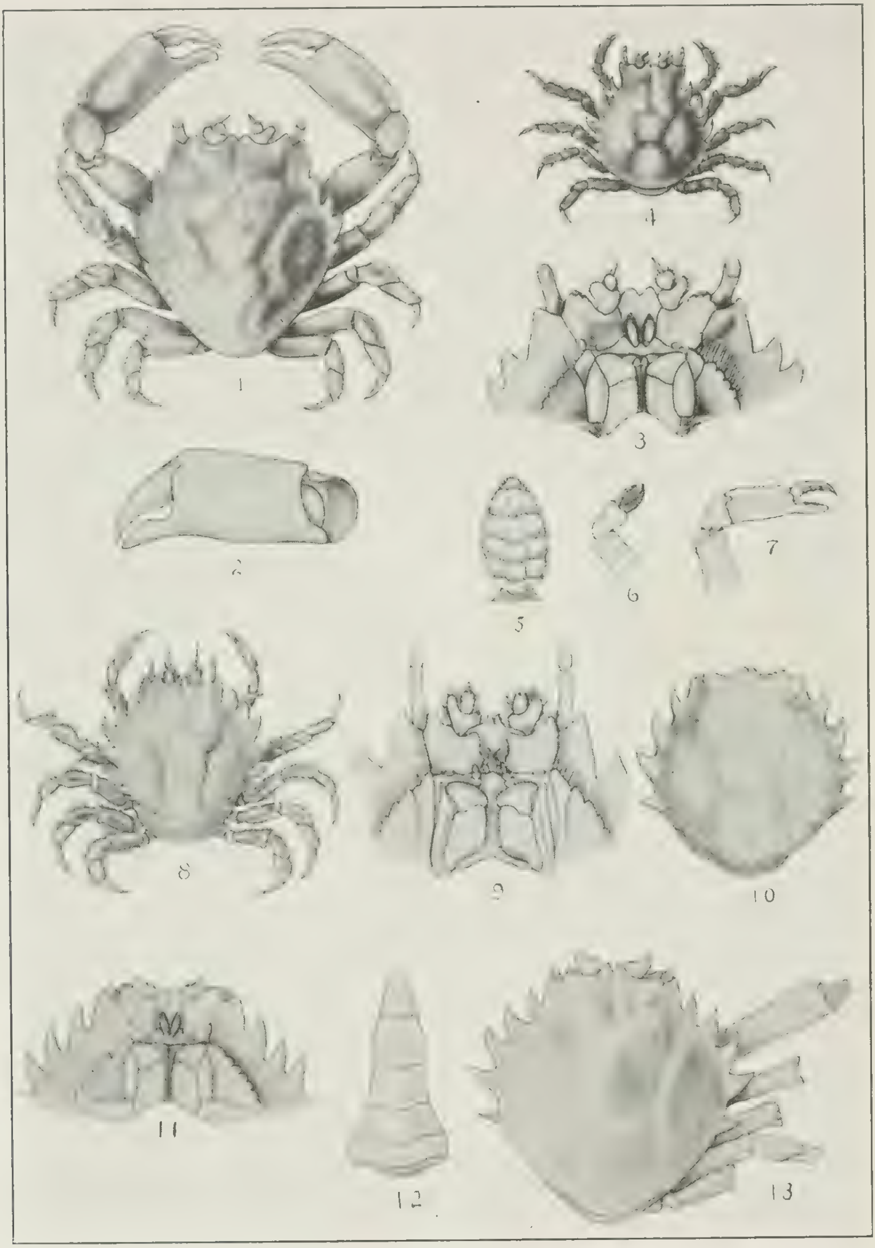
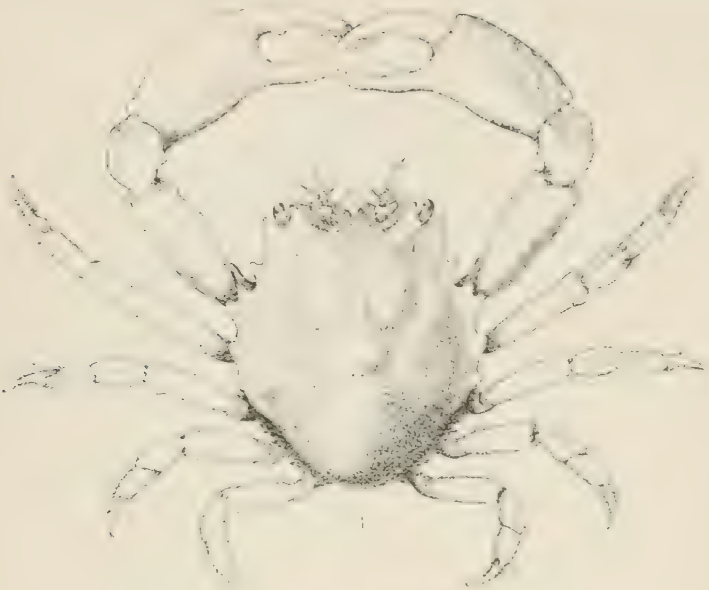
1–6. Thoe erosa. (Page 351.) 7–9. Temnonotus granulosus. (Page 341.) 10–12. T. simplex. (Page 342)

For explanation of plate see page 592



1–4. PITHO QUINQUEDENTATA. (PAGE 361.) 5–9. P. SEXDENTATA. (PAGE 367.)
10. P. QUADRIDENTATA. (PAGE 369.) 11–13. P. LAEVIGATA. (PAGE 372)

FOR EXPLANATION OF PLATE SEE PAGES 592 AND 593



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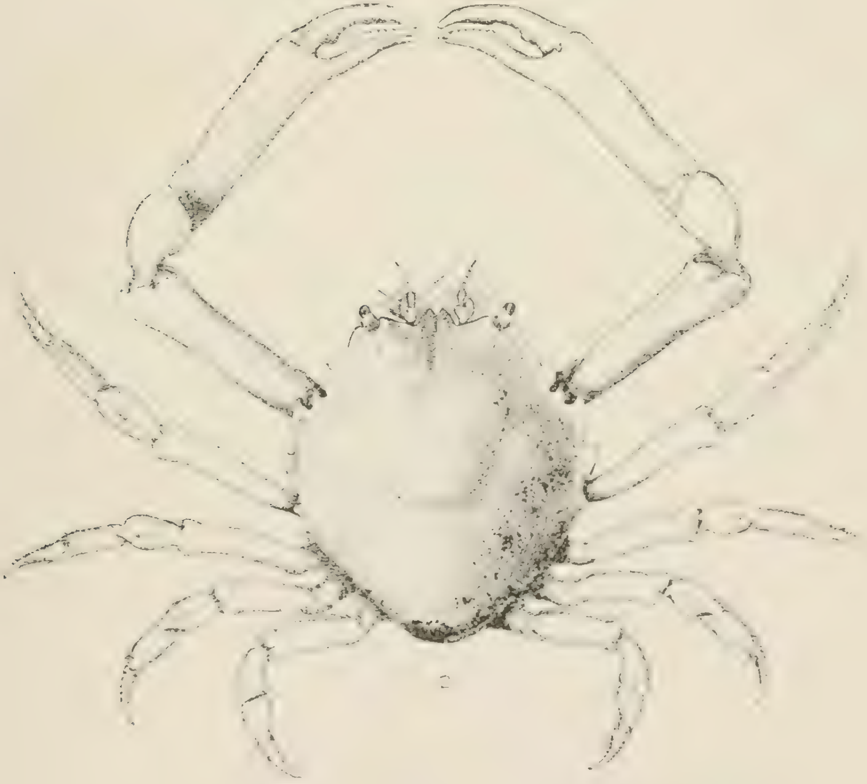

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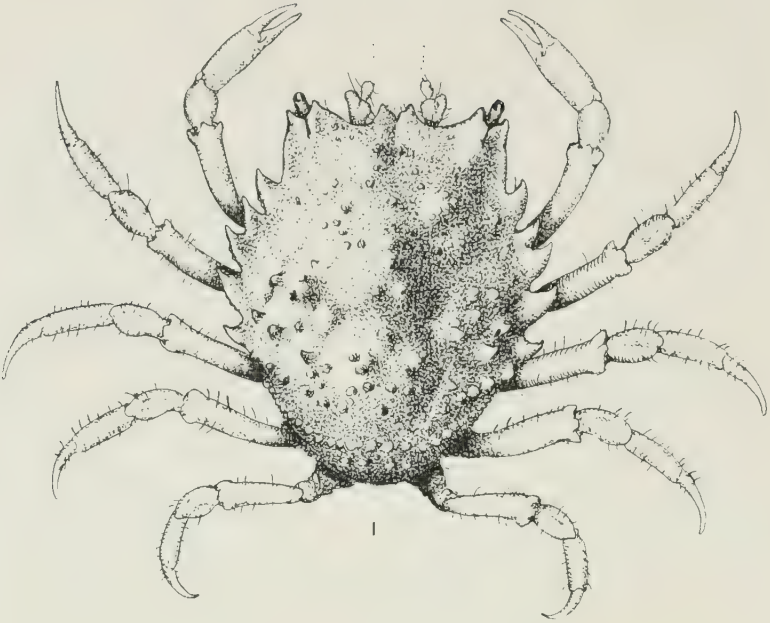
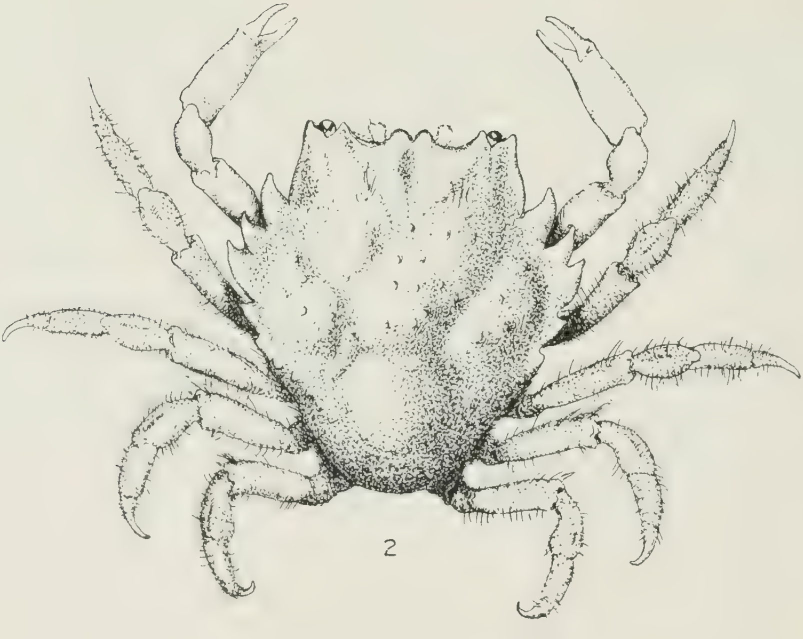
1. Pitho aculeata. (Page 357.) 2. P. anisodon. (Page 368)

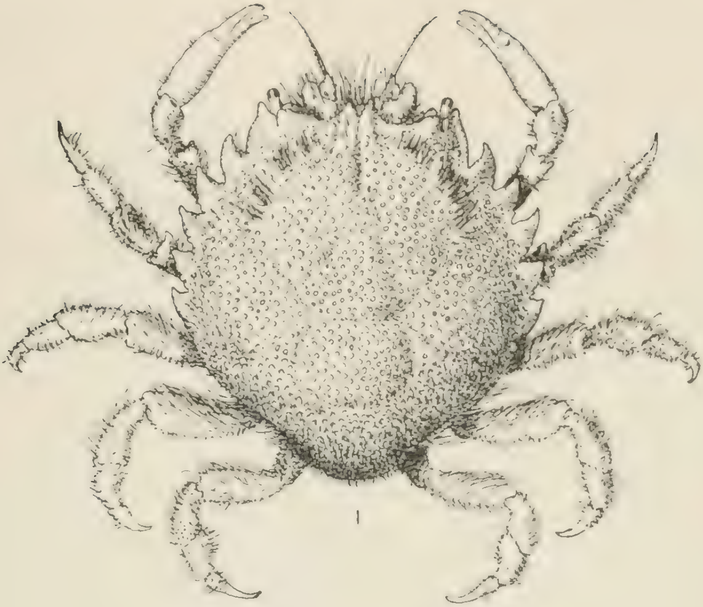
For explanation of plate see page 593

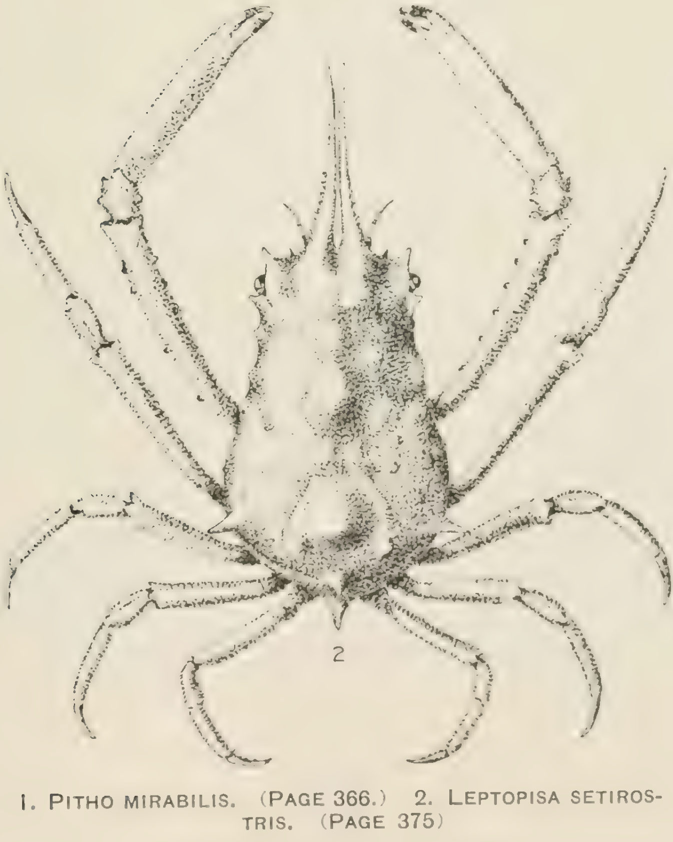




1. PITHO PICTETI. (PAGE 359.) 2. P. LHERMINIERI. (PAGE 362)

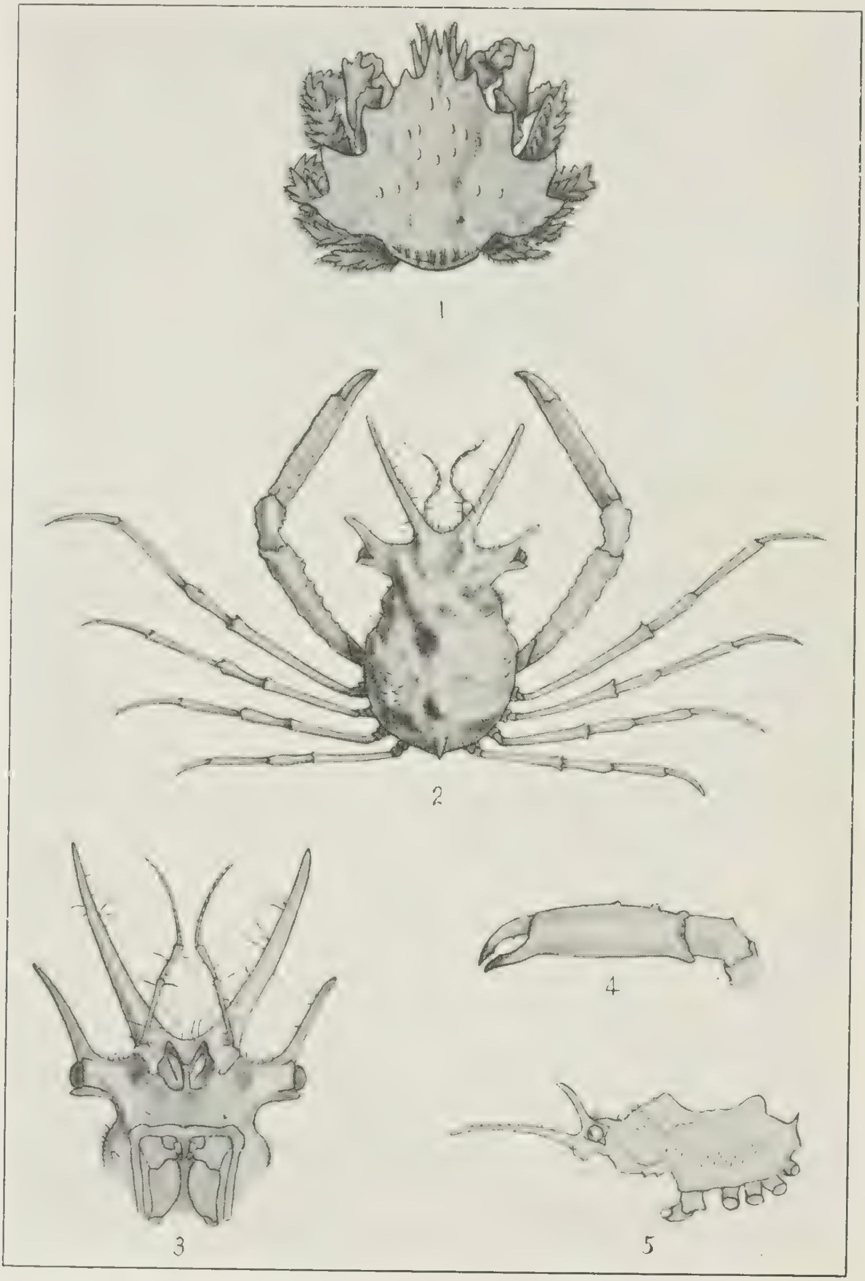
FOR EXPLANATION OF PLATE SEE PAGE 593





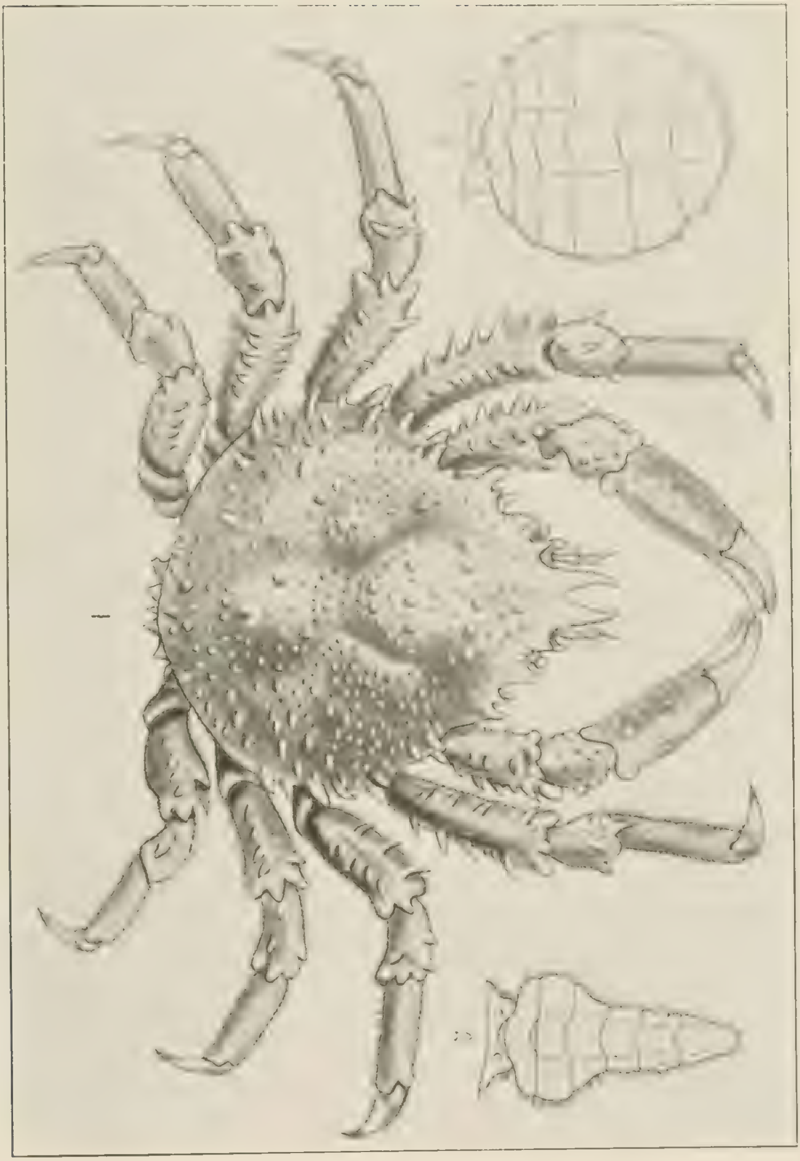
1. PITHO MIRABILIS. (PAGE 366.) 2. LEPTOPISA SETIROSTRIS. (PAGE 375)

FOR EXPLANATION OF PLATE SEE PAGE 593



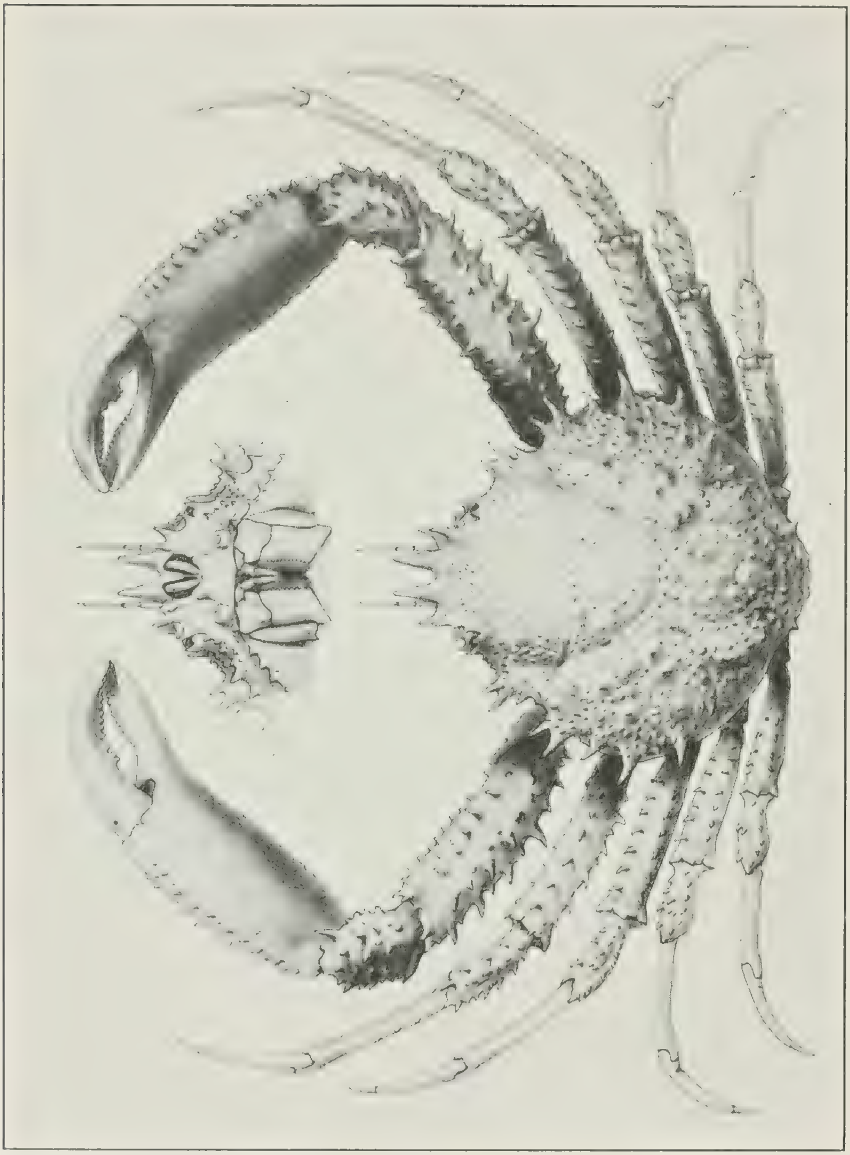
1. ANAPTYCHUS CORNUTUS. (PAGE 378.) 2–5. PICROCEROIDES TUBULARIS. (PAGE 354)

FOR EXPLANATION OF PLATE SEE PAGE 593



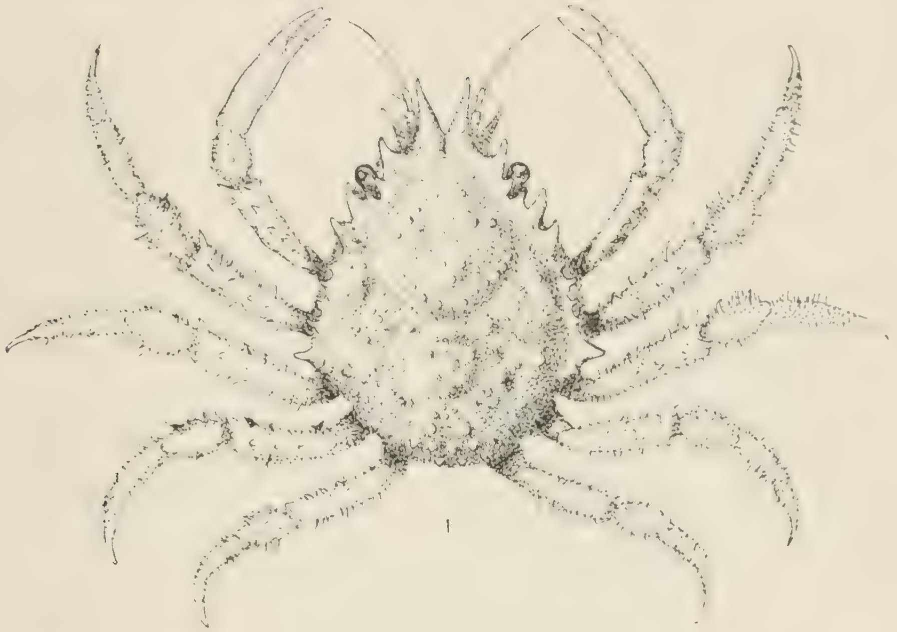
MITHRAX ROSTRATUS. (PAGE 386)

FOR EXPLANATION OF PLATE SEE PAGE 693



MITHRAX CORNUTUS. (PAGE 386)

FOR EXPLANATION OF PLATE SEE PAGE 593



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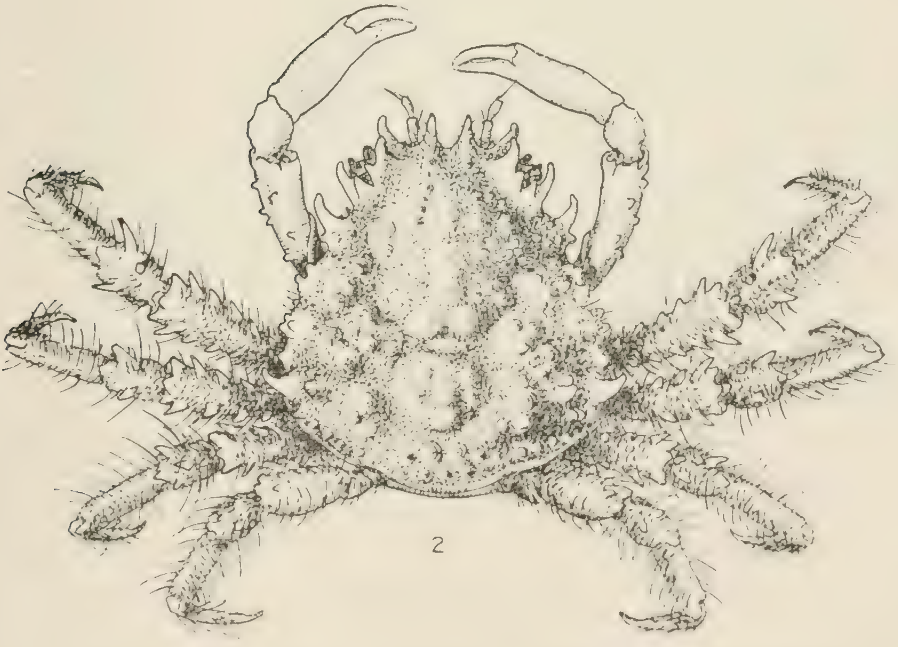

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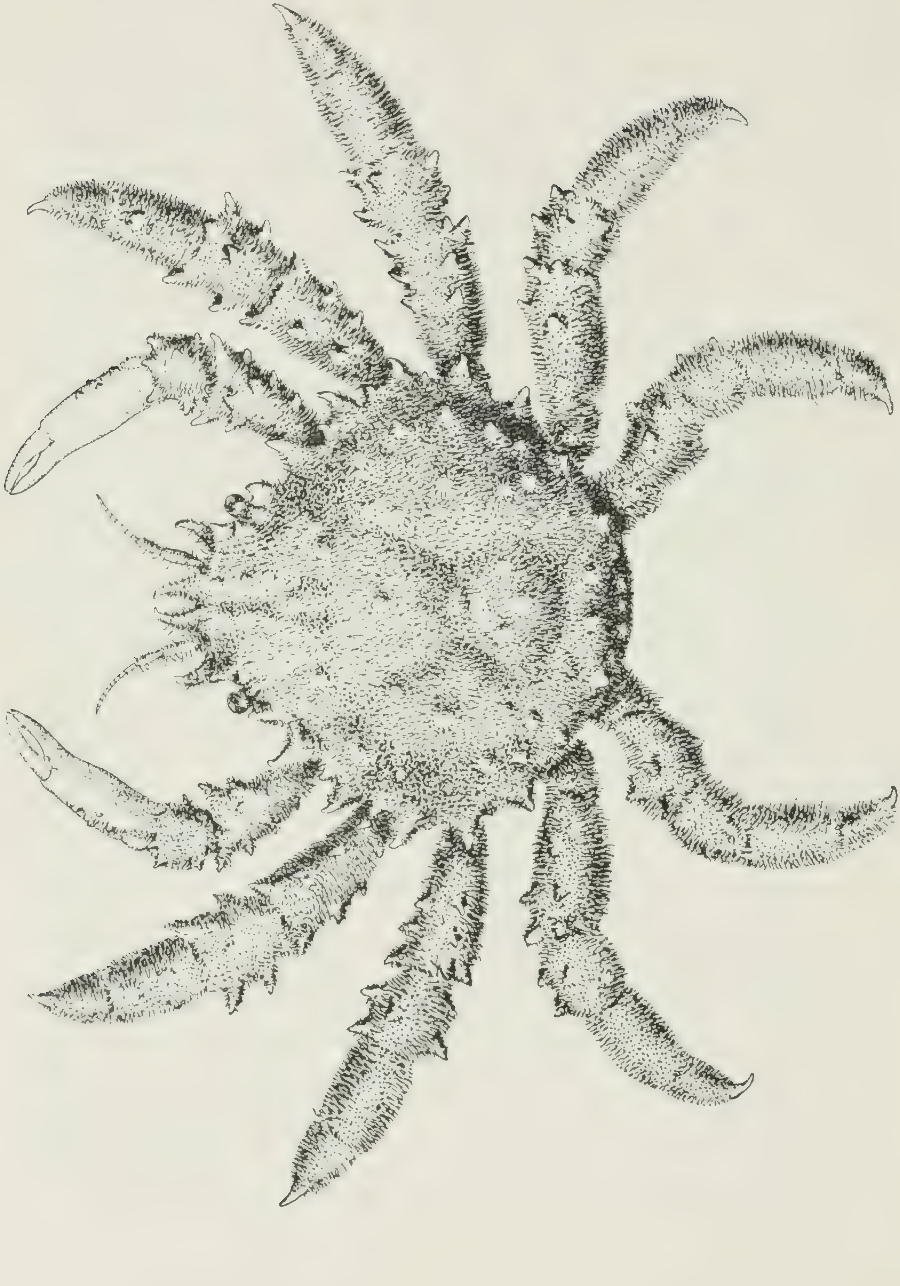
I. MITHRAX ACUTICORNIS. (PAGE 388.) 2. M. HOLDERI. (PAGE 392)

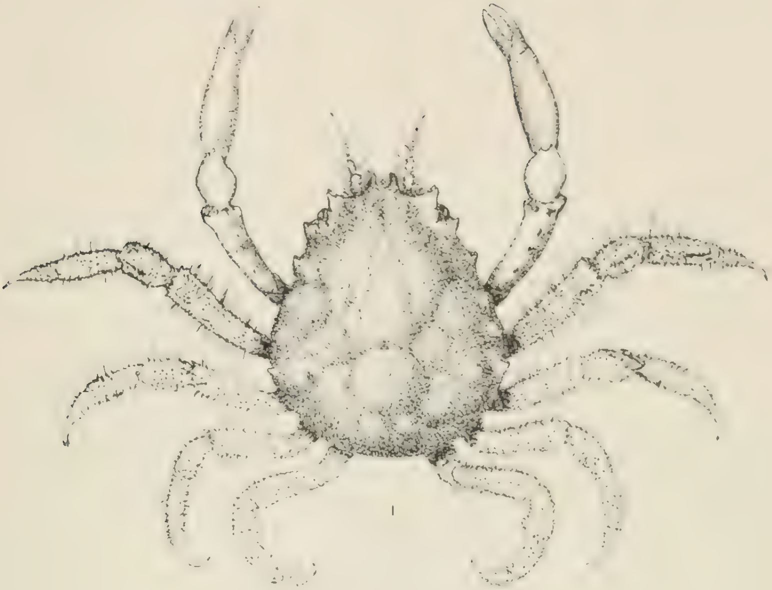
FOR EXPLANATION OF PLATE SEE PAGE 594

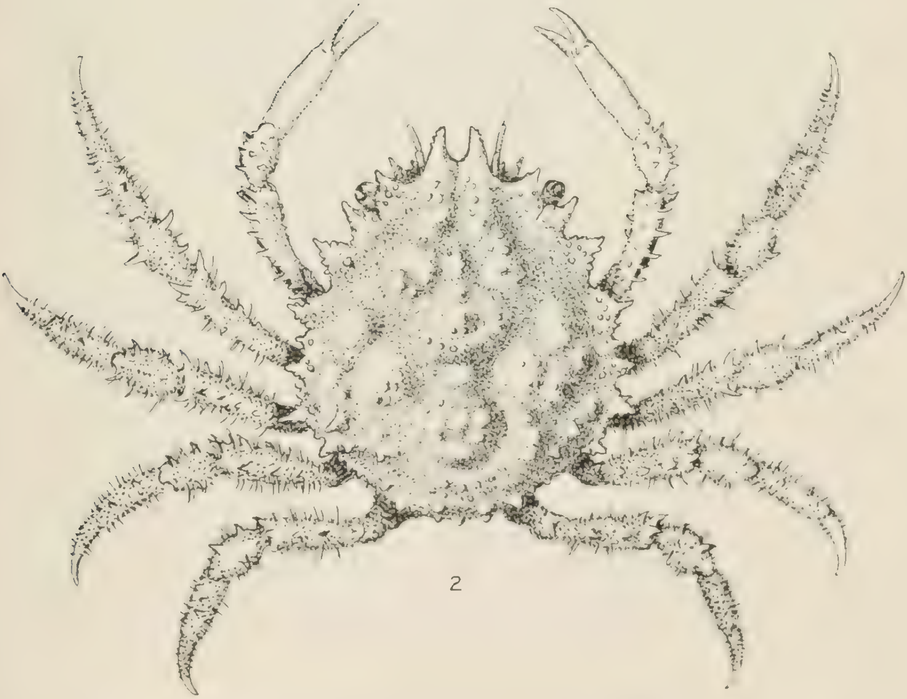
5487—25——37



MITHRAX PILOSUS. (PAGE 394)

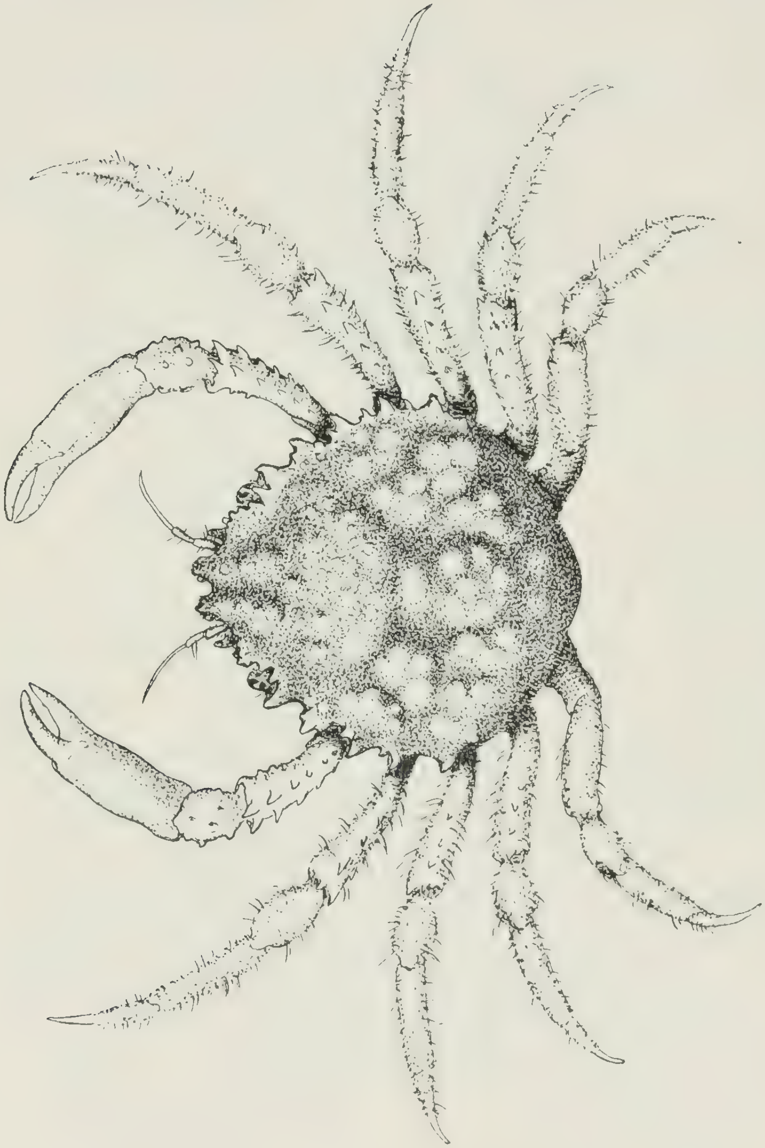
FOR EXPLANATION OF PLATE SEE PAGE 594





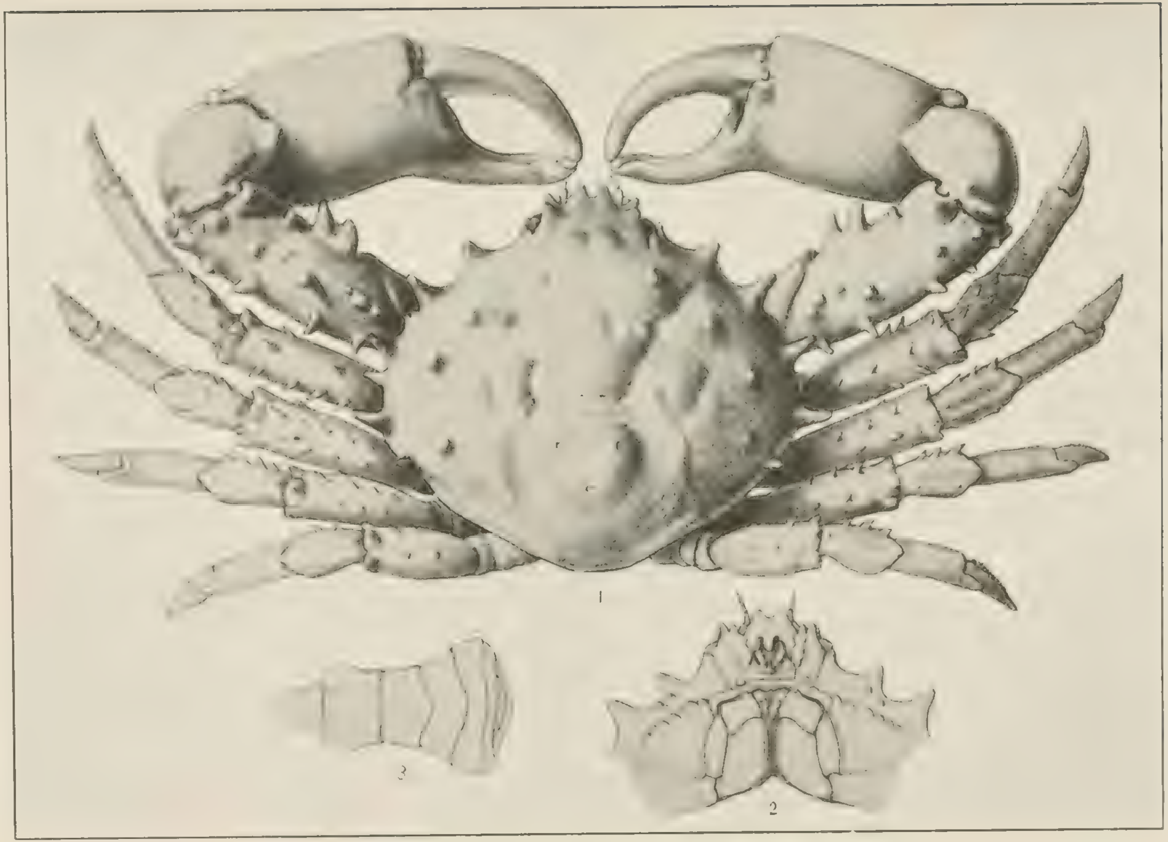
1. MITHRAX BAHAMENSIS. (PAGE 393.) 2. M. HEMPHILLI. (PAGE 395)

FOR EXPLANATION OF PLATE SEE PAGE 594



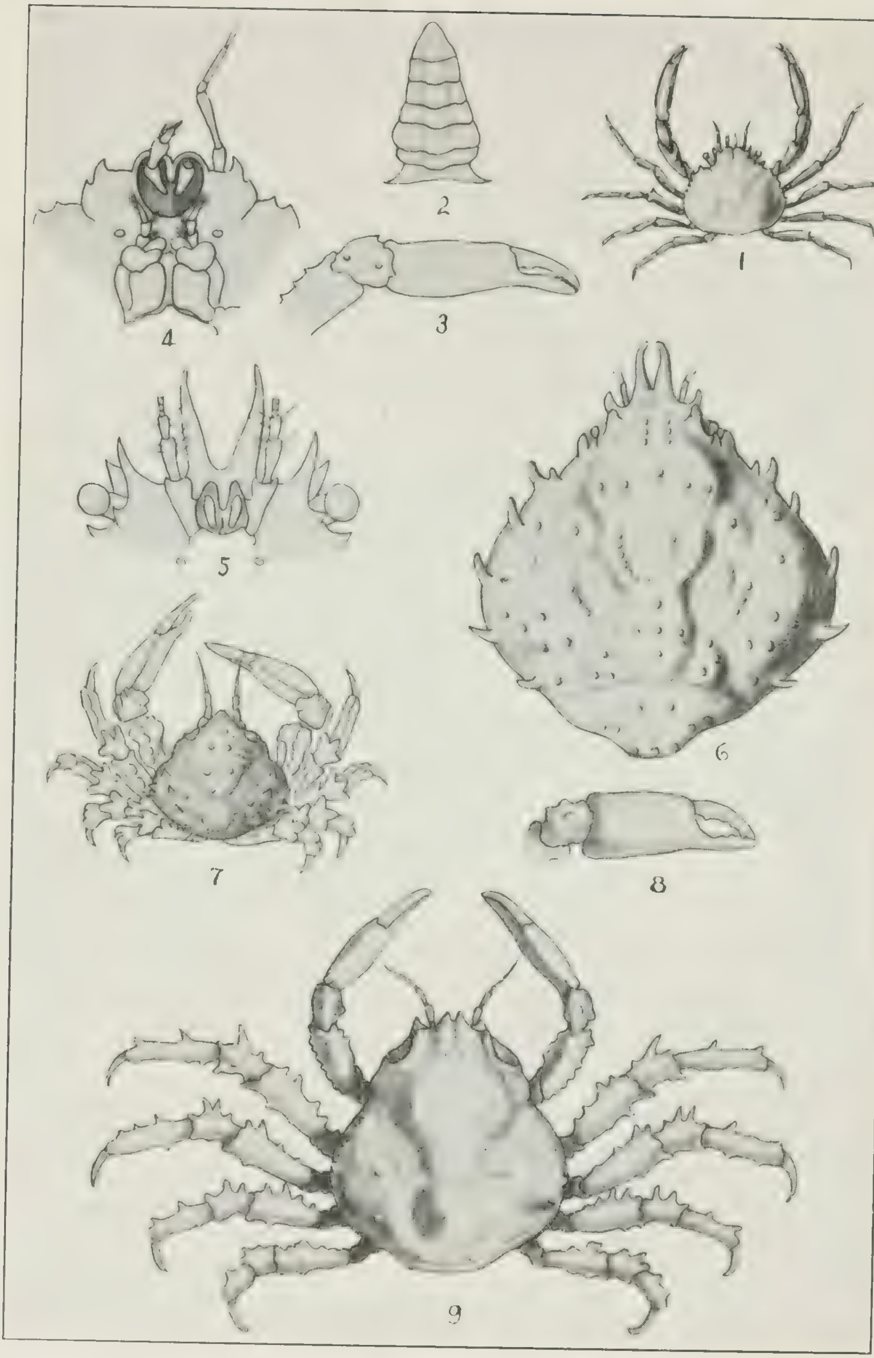
MITHRAX SINENSIS. (PAGE 419)

FOR EXPLANATION OF PLATE SEE PAGE 594



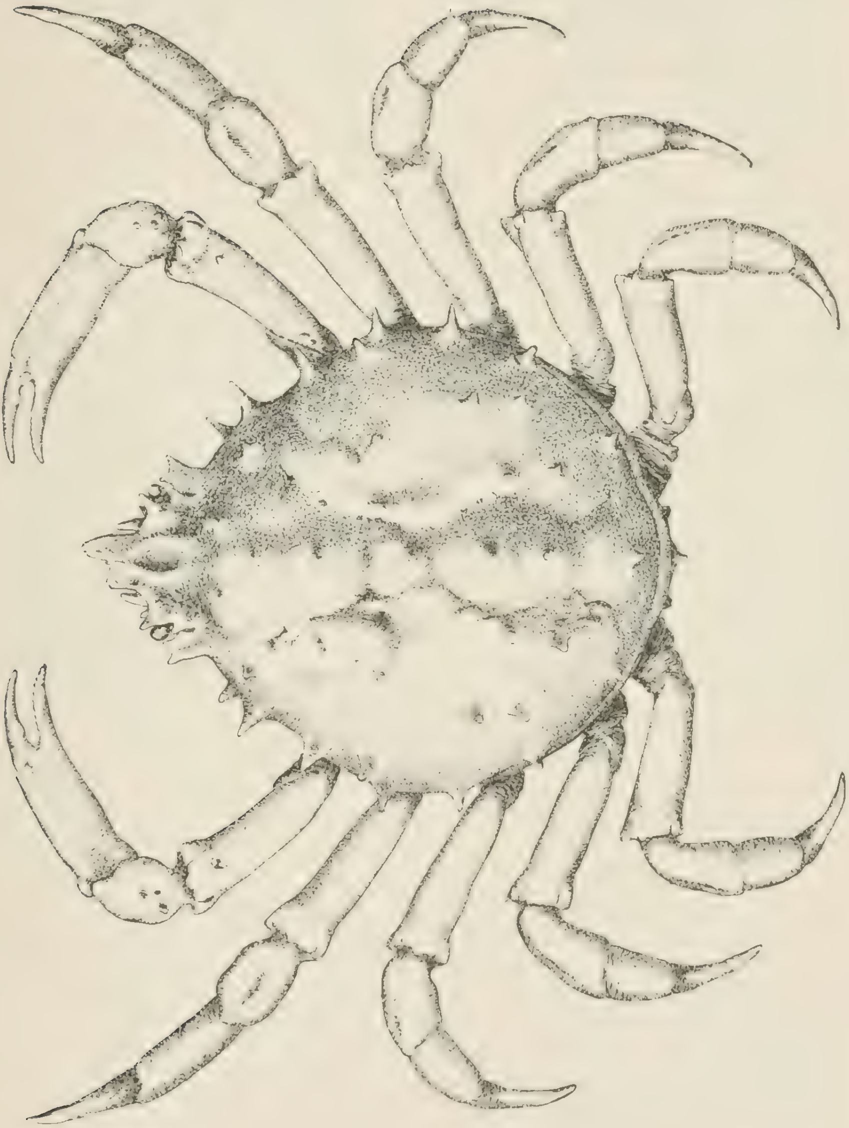
MITHRAX LAEVIMANUS. PAGE 419)

FOR EXPLANATION OF PLATE SEE PAGE 594



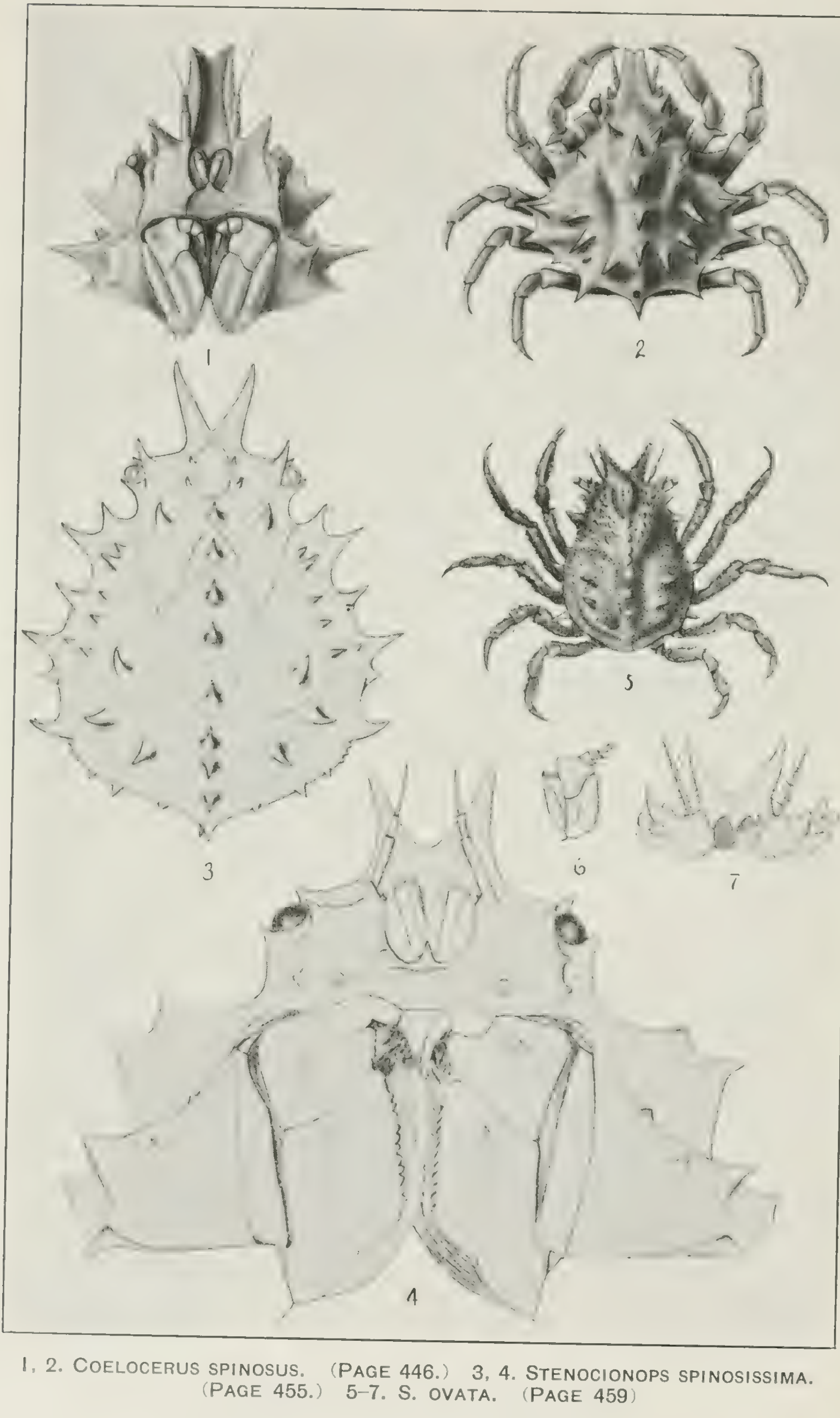
1–4. Mithrax pygmaeus. (Page 406.) 5. M. spinipes. (Page 391.) 6. M. armatus. (Page 399.) 7. Teleophrys cristulipes. (Page 441.) 8, 9. T. ornatus. (Page 444)

For explanation of plate see page 594



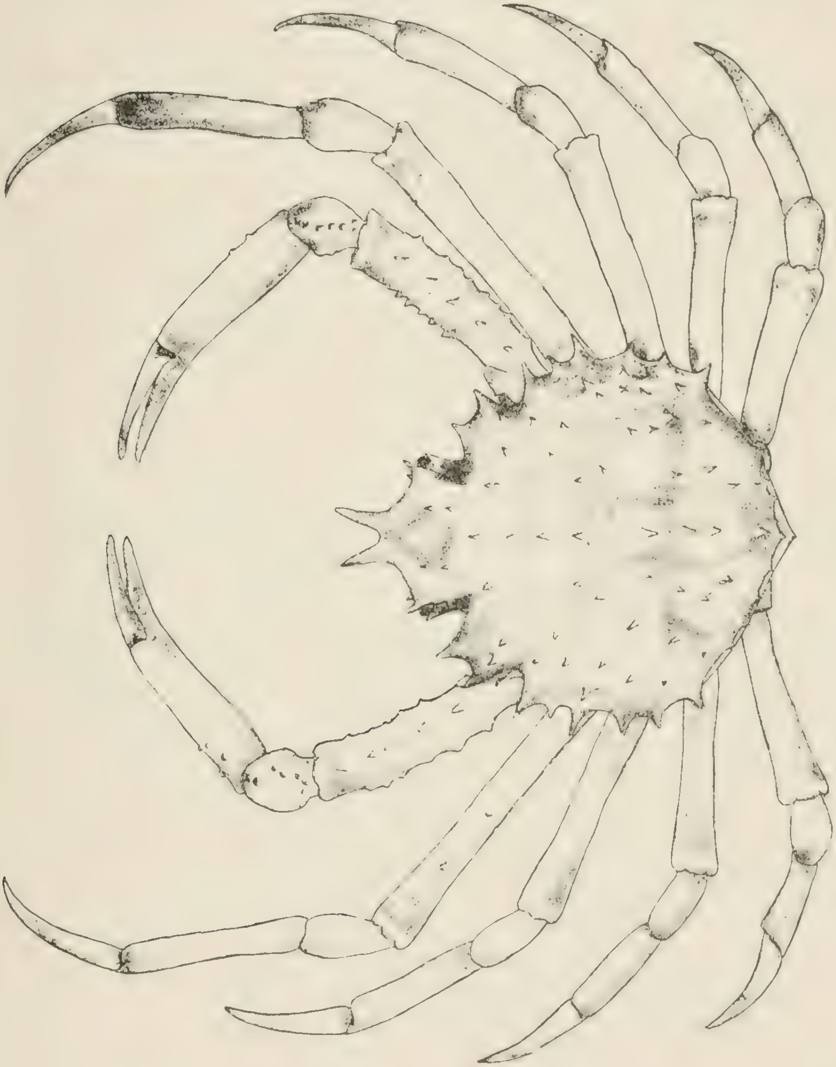
COELOCERUS SPINOSUS. (PAGE 446)

FOR EXPLANATION OF PLATE SEE PAGE 594



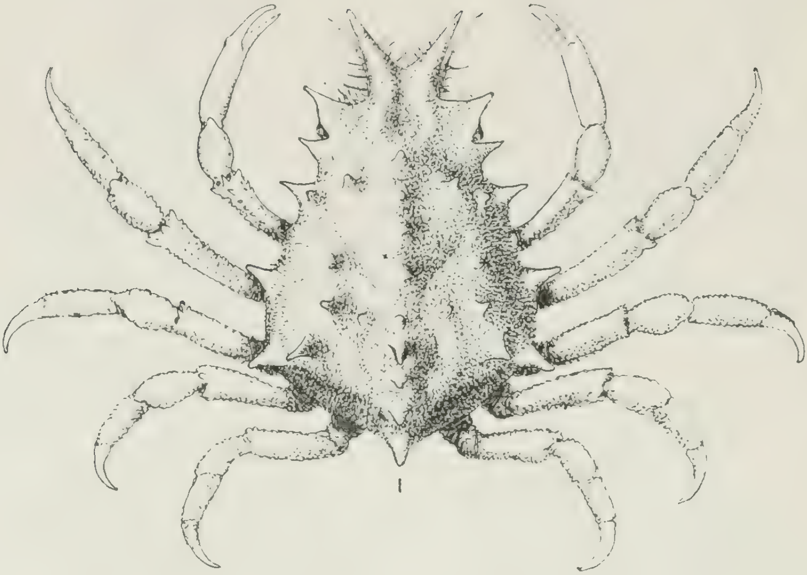
1, 2. Coelocerus spinosus. (Page 446.) 3, 4. Stenocionops spinosissima. (Page 455.) 5–7. S. ovata. (Page 459)

For explanation of plate see page 595



STENOCIONOPS SPINOSISSIMA. (PAGE 455)

FOR EXPLANATION OF PLATE SEE PAGE 595



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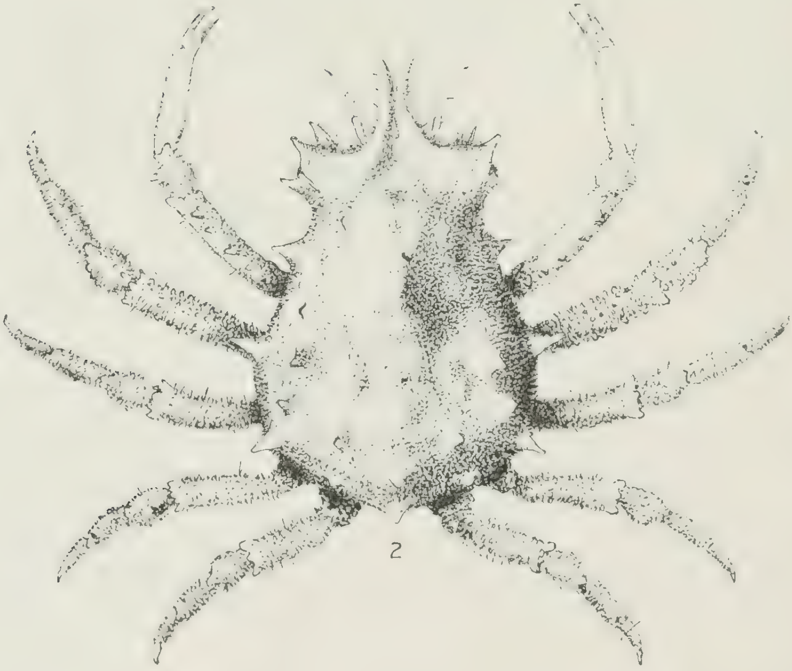

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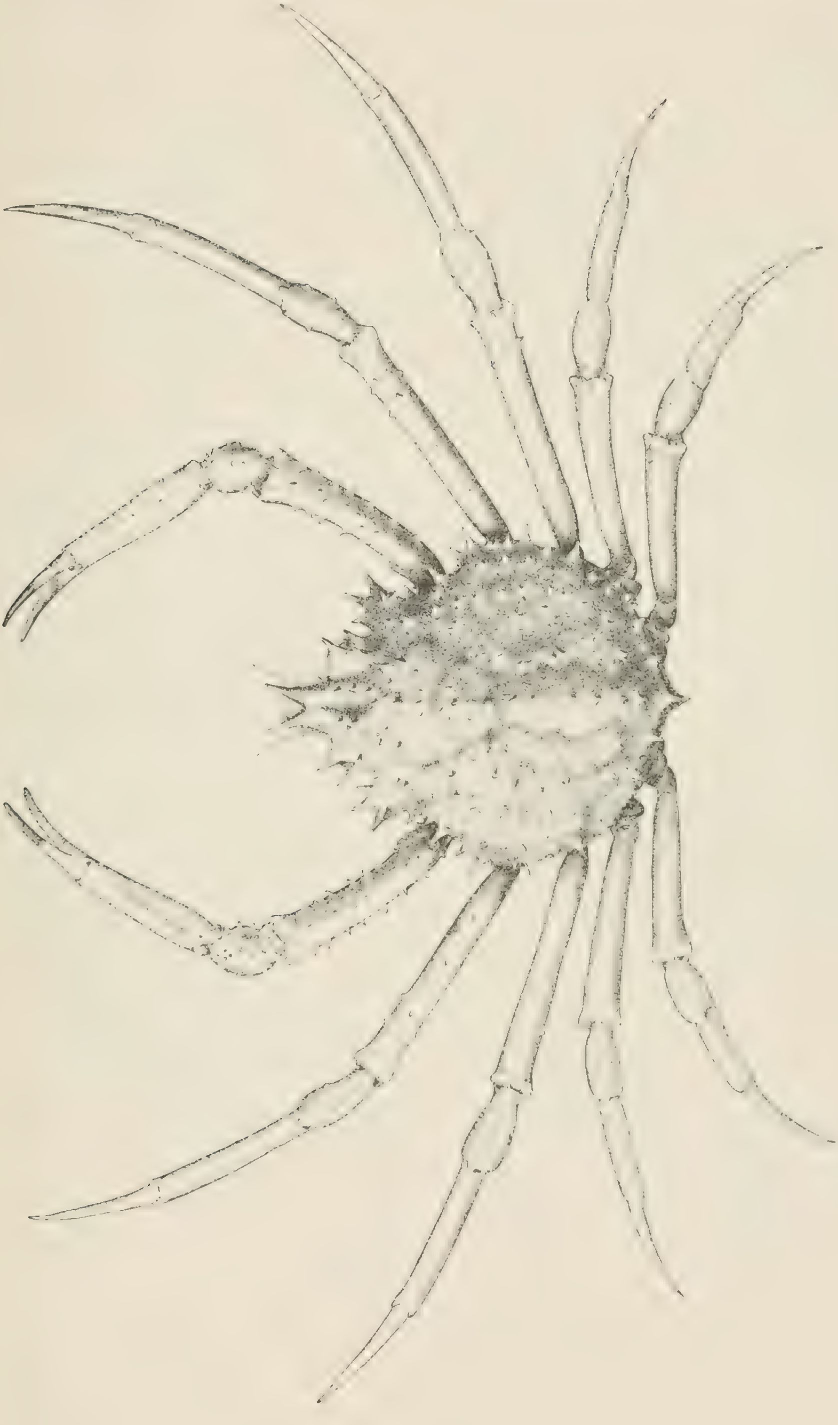
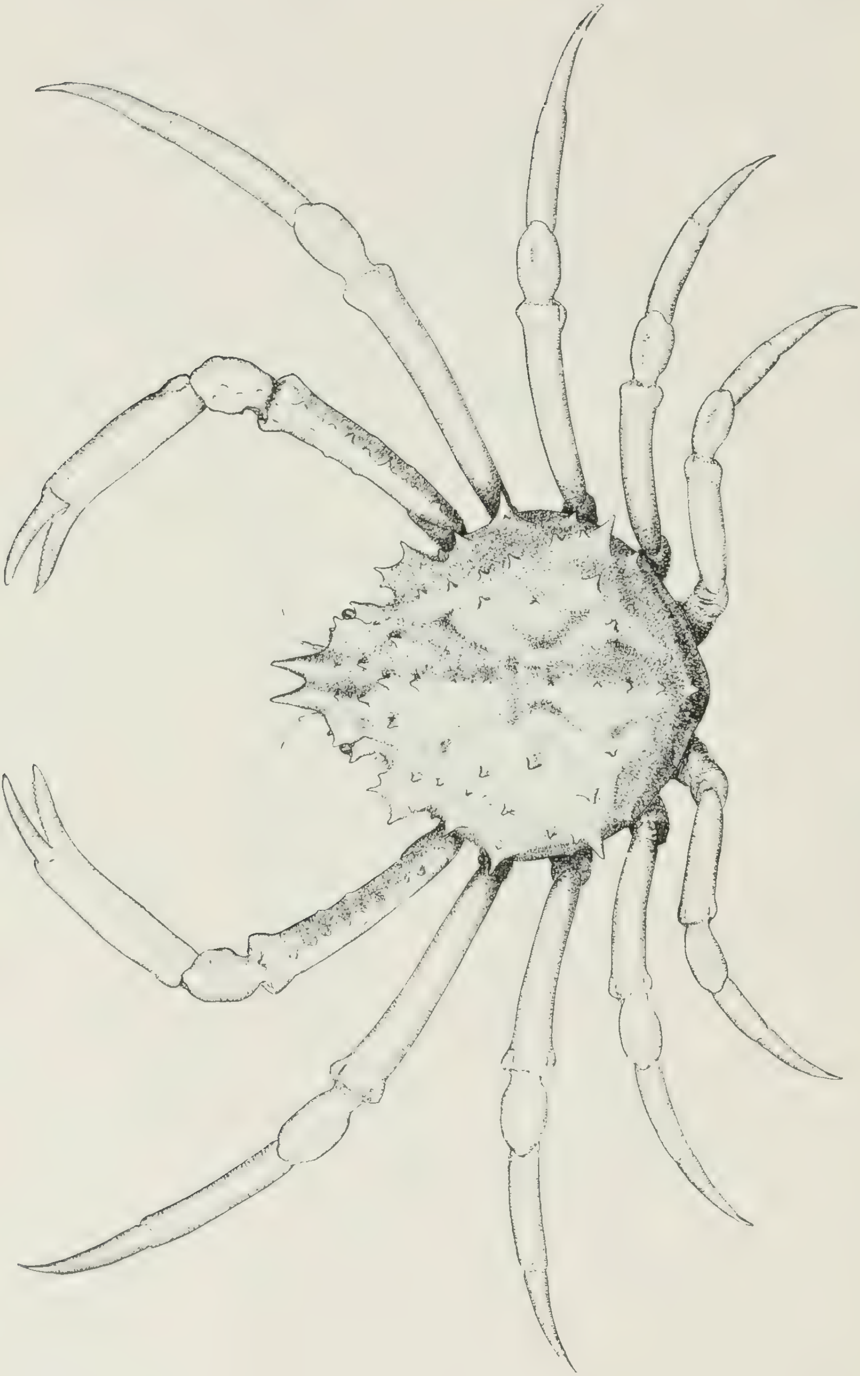
1. STENOCIONOPS TRIANGULATA. (PAGE 461.) 2. S. CONTIGUA. (PAGE 451)

FOR EXPLANATION OF PLATE SEE PAGE 595



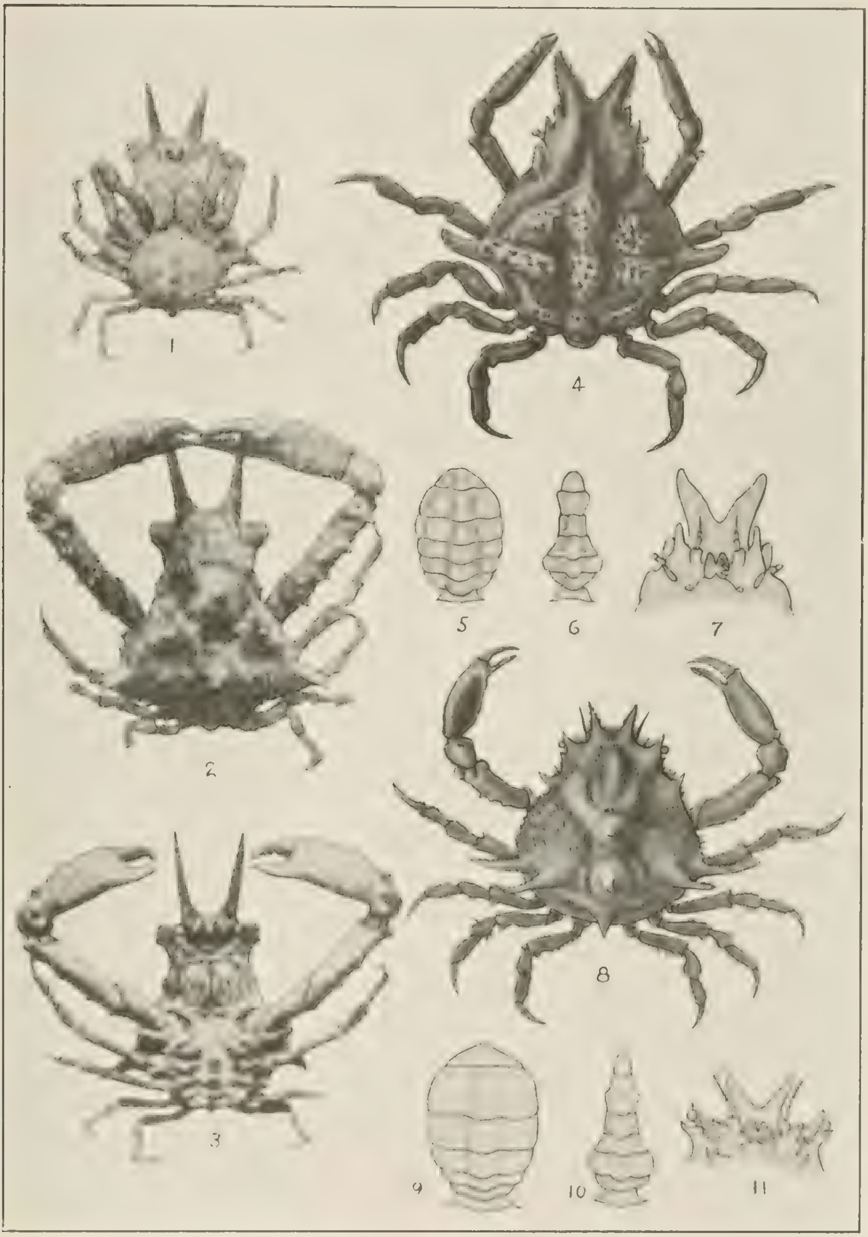
STENOCIONOPS SPINIMANA. (PAGE 457)

FOR EXPLANATION OF PLATE SEE PAGE 595



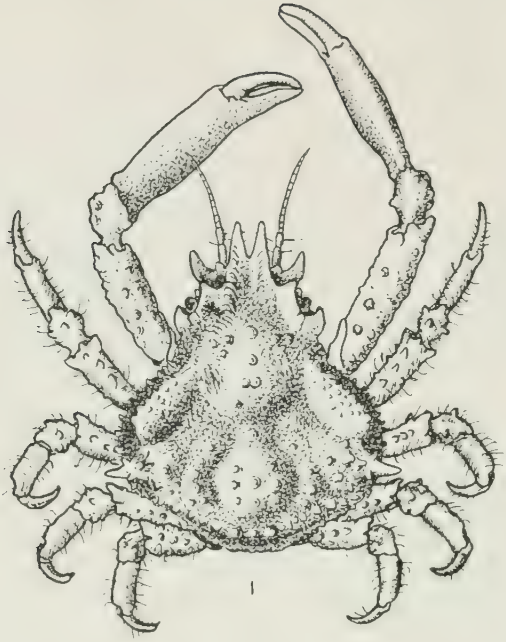
STENOCIONOPS MACDONALDI. (PAGE 460)

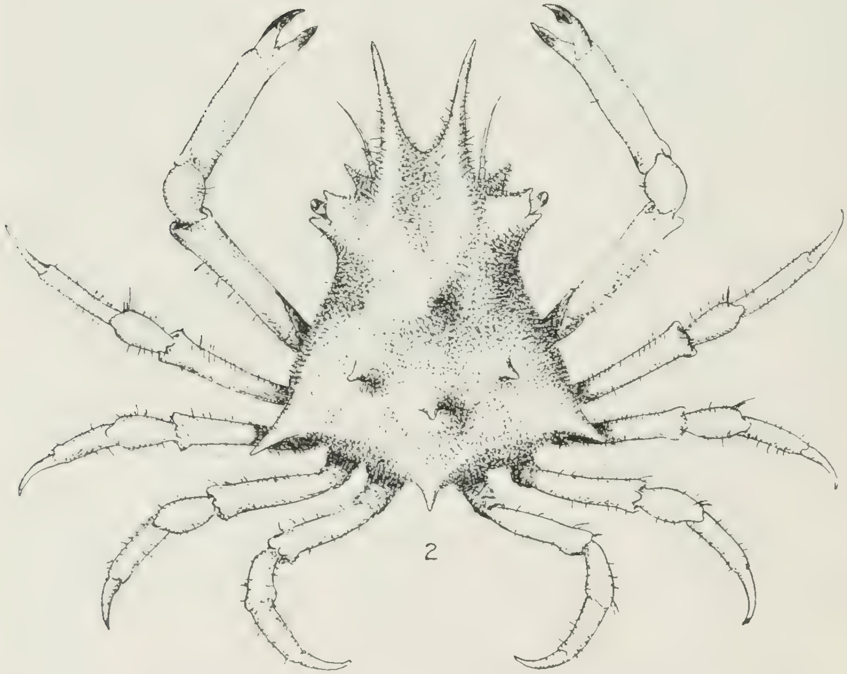
FOR EXPLANATION OF PLATE SEE PAGE 595



1–3. Macrocoeloma diplacanthum. (Page 478.) 4–7. M. villosum. (Page 482.) 8–11. M. heptacanthum. (Page 473)

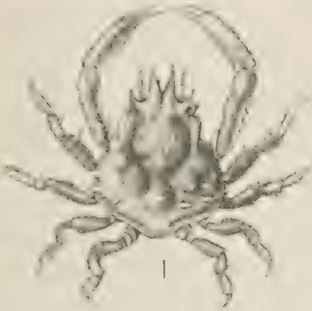
For explanation of plate see page 595





1. Microphrys branchialis. (Page 502.) 2. Macrocoeloma camptocerum. (Page 469)

For explanation of plate see page 596



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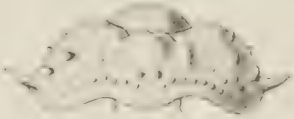

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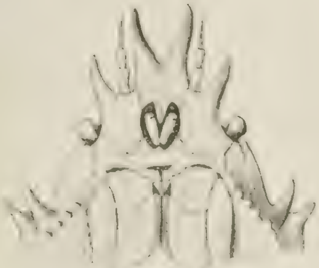

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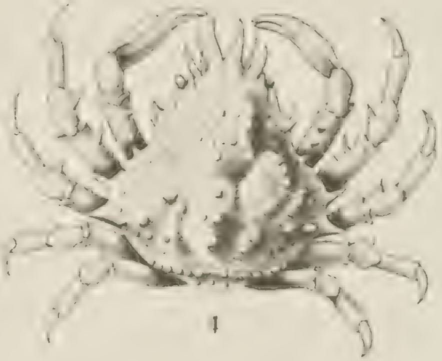

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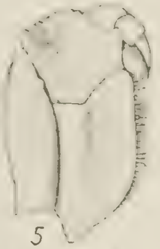

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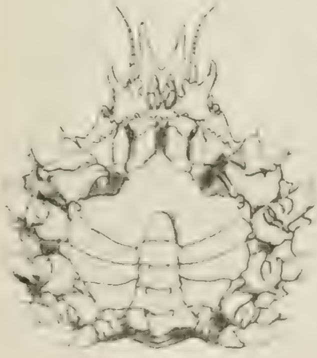

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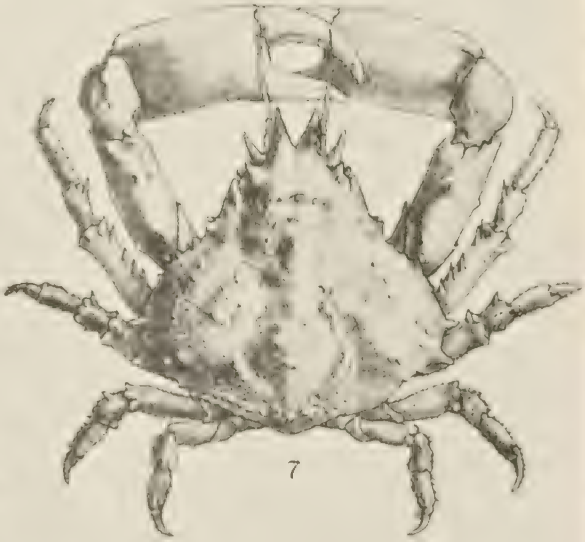

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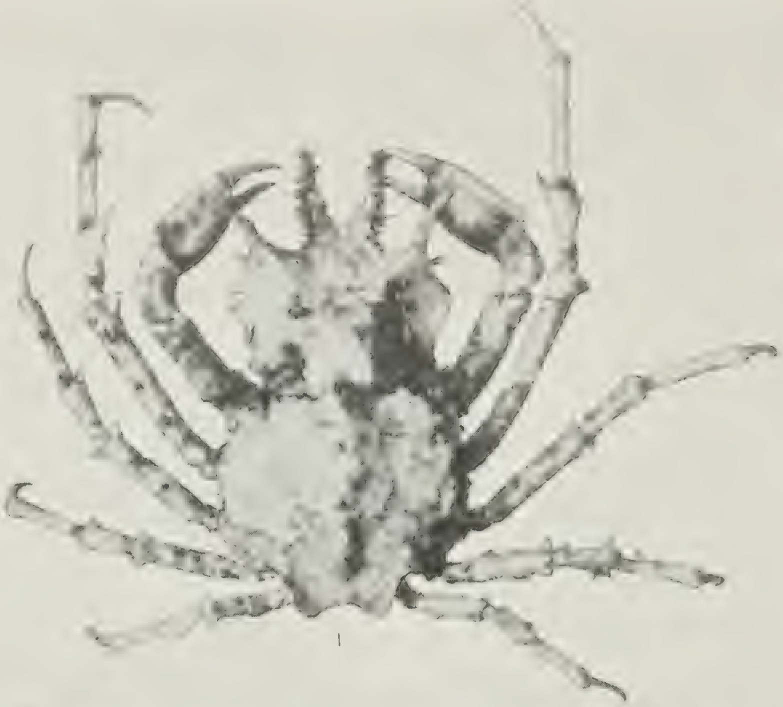
1. MICROPHRYS ACULEATUS. (PAGE 500.) 2-7. M. WEDDELLI. (PAGE 496)

FOR EXPLANATION OF PLATE SEE PAGE 596



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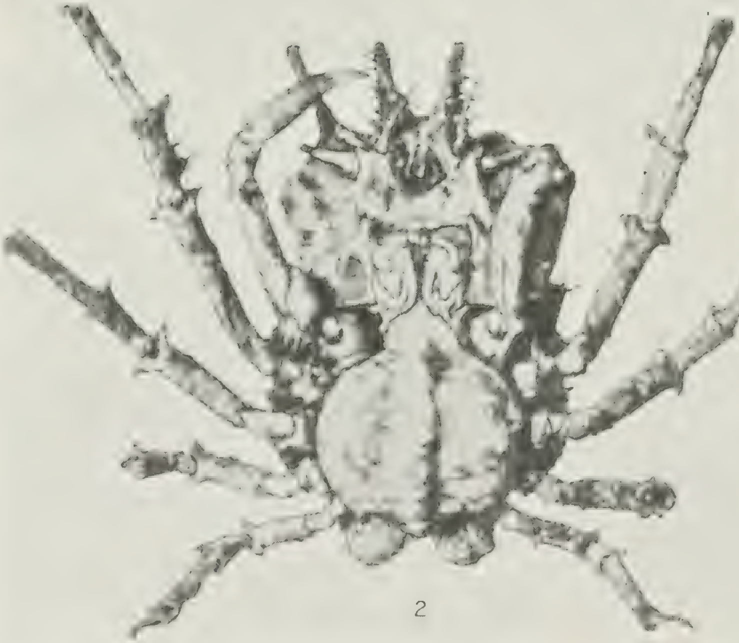

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TYCHE EMARGINATA. (PAGE 508)

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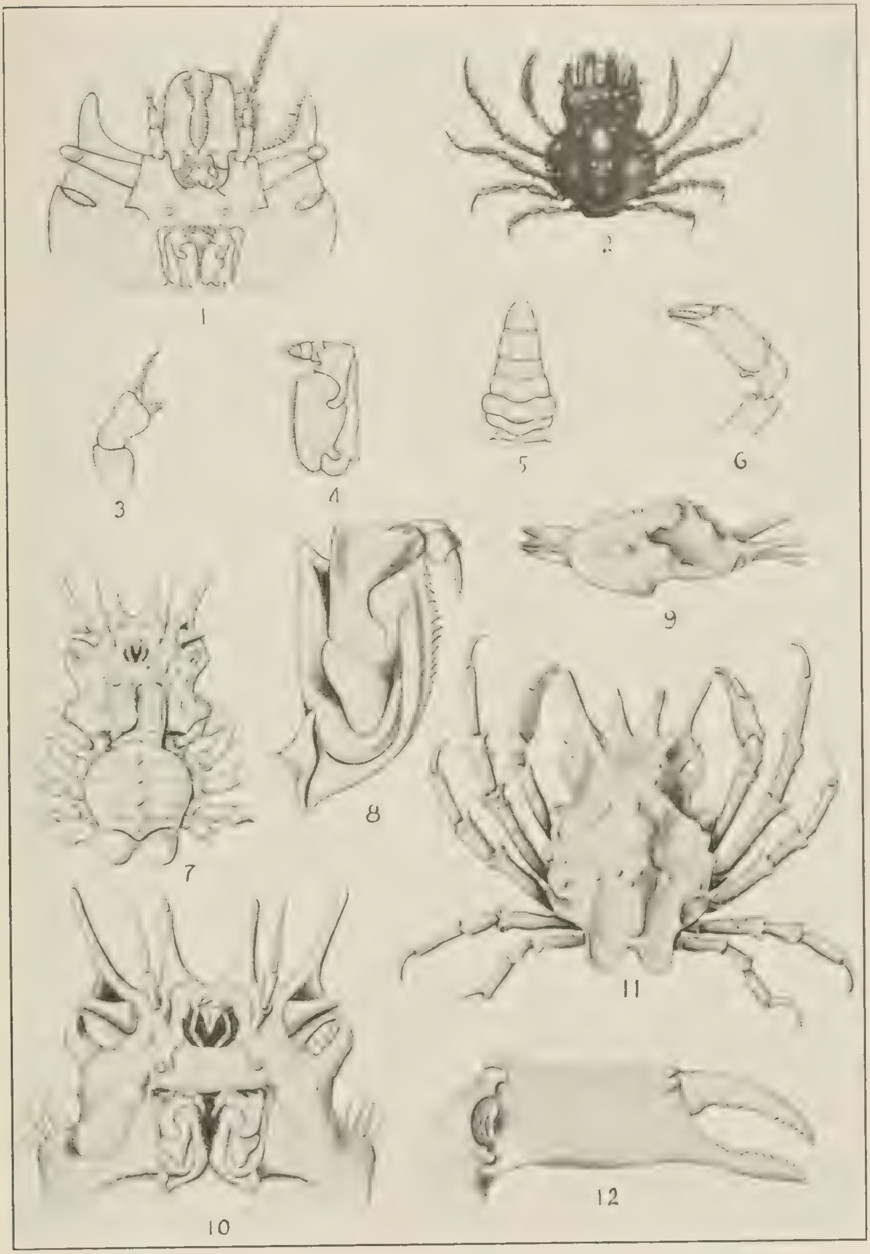
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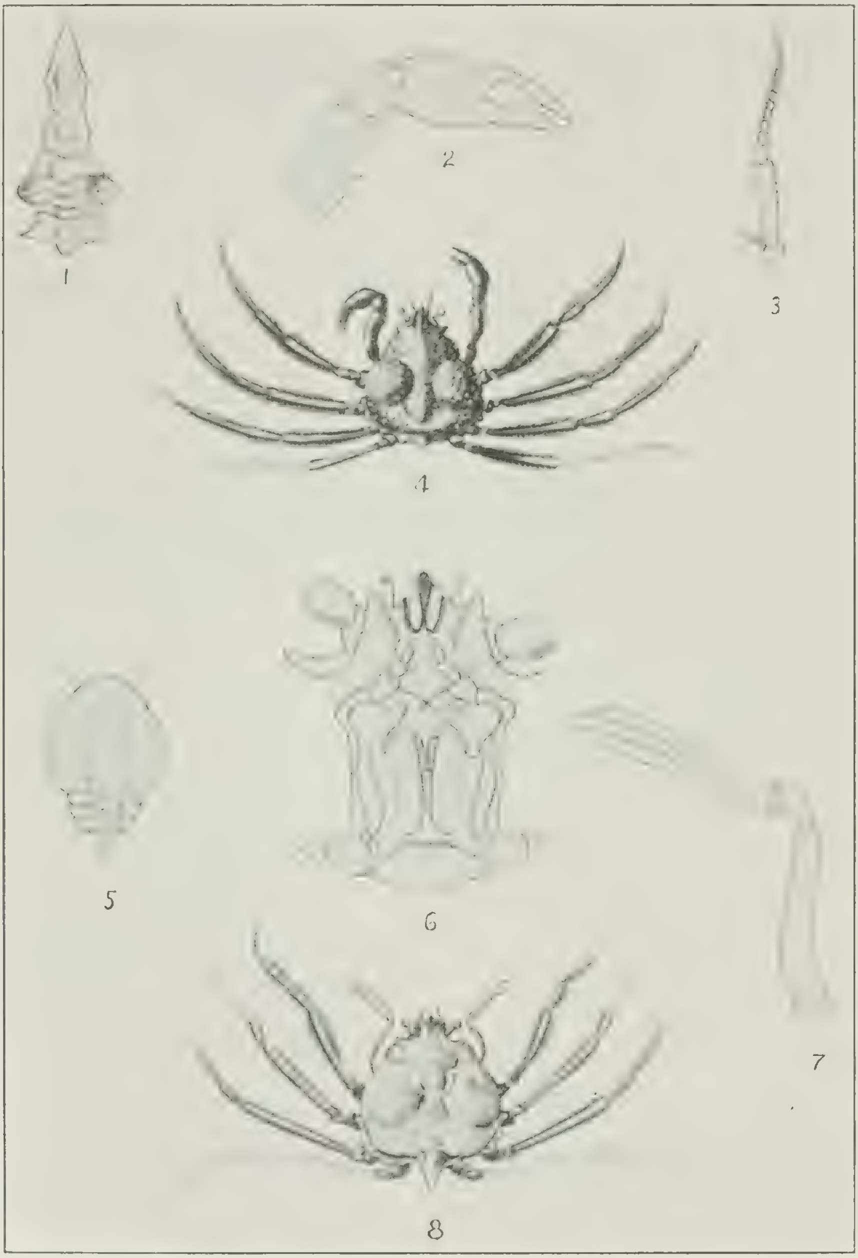
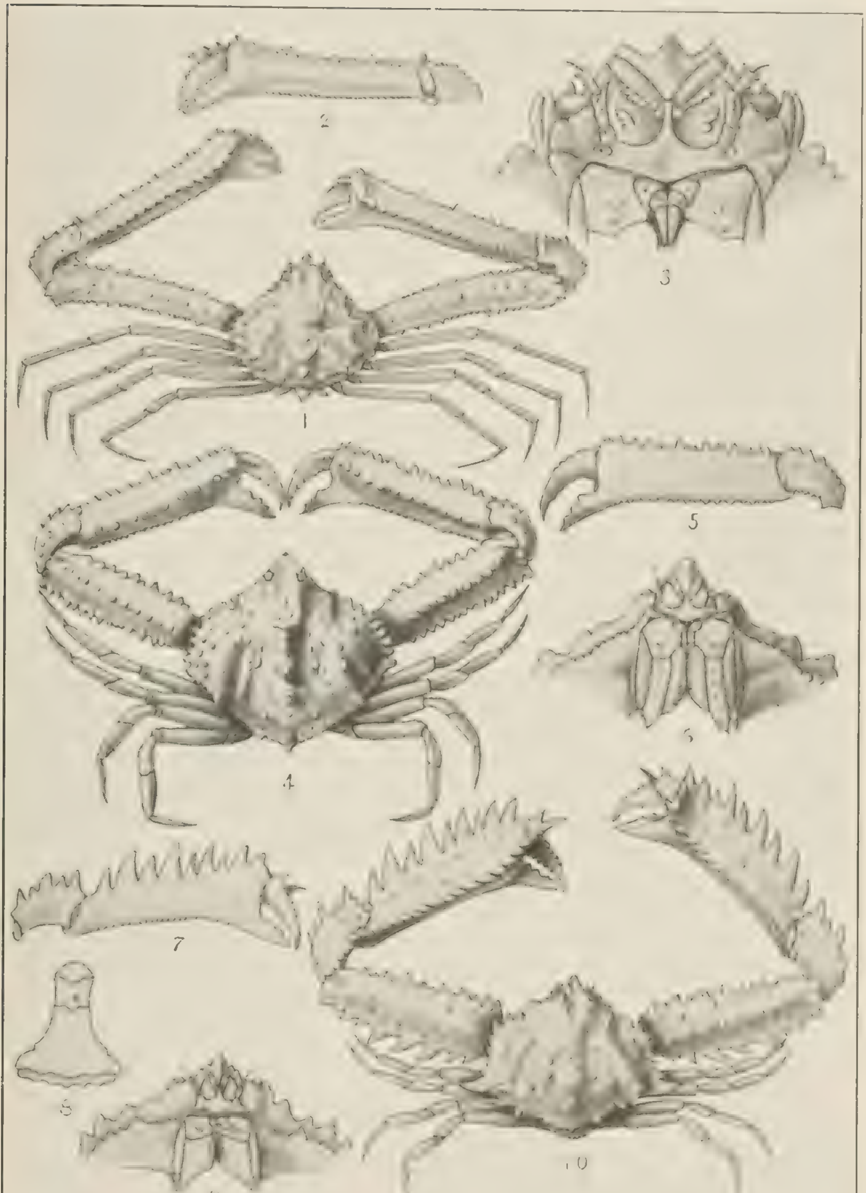
1–6. TYCHE LAMELLIFRONS. (PAGE 508.) 7–12. T. EMARGINATA. (PAGE 508)

FOR EXPLANATION OF PLATE SEE PAGE 596



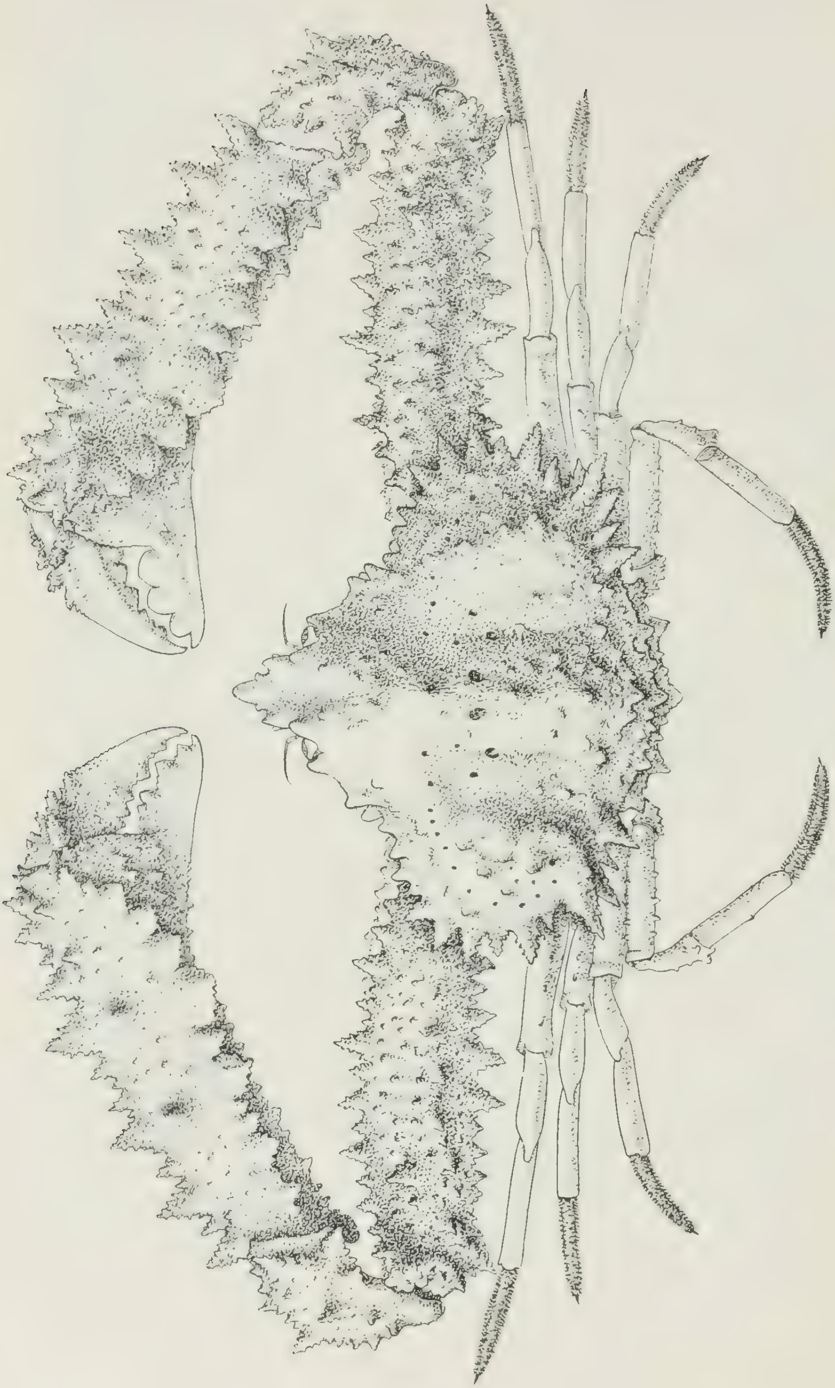
1-4. Dasygyius gibbosus. (Page 138.) 5-8. D. depressus. (Page 138)

For explanation of plate see page 596



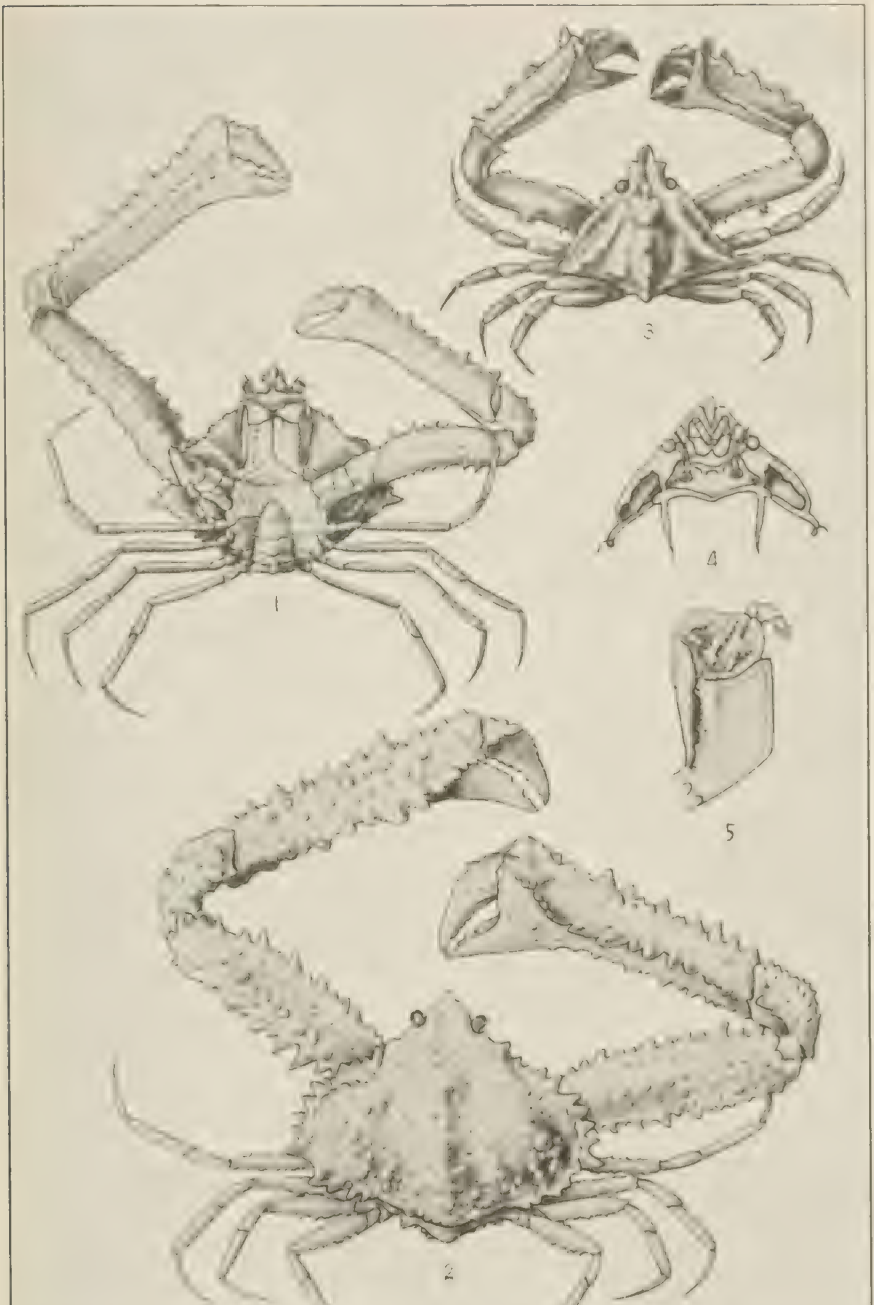
1–3. Parthenope agonus. (Page 513.) 4–6. P. hyponca. (Page 514.)
7–10. P. (Platylambrus) serrata. (Page 516)

For explanation of plate see page 597



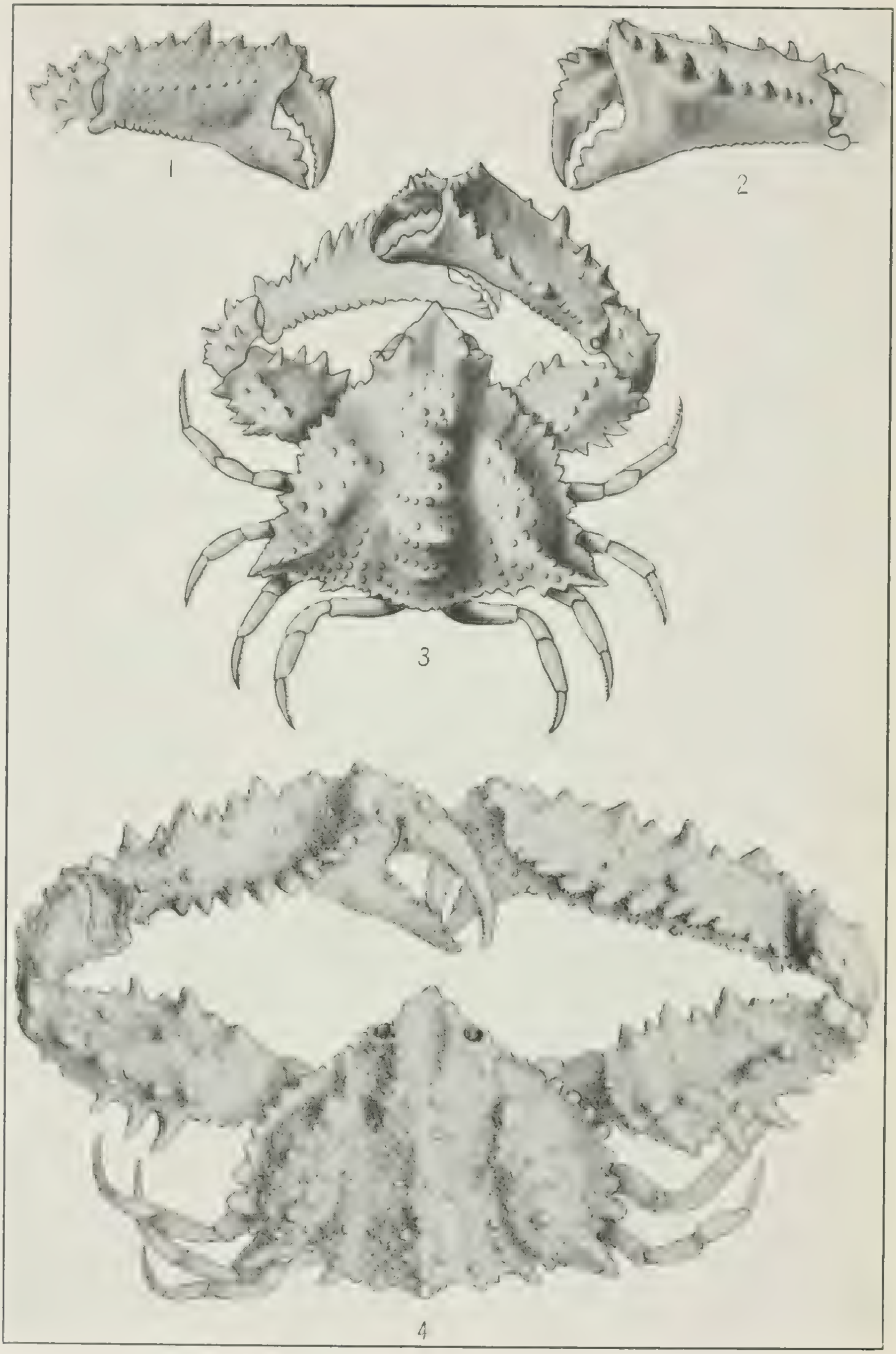
PARTHENOPE (PLATYLAMBRUS) POURTALESII. (PAGE 521)

FOR EXPLANATION OF PLATE SEE PAGE 597



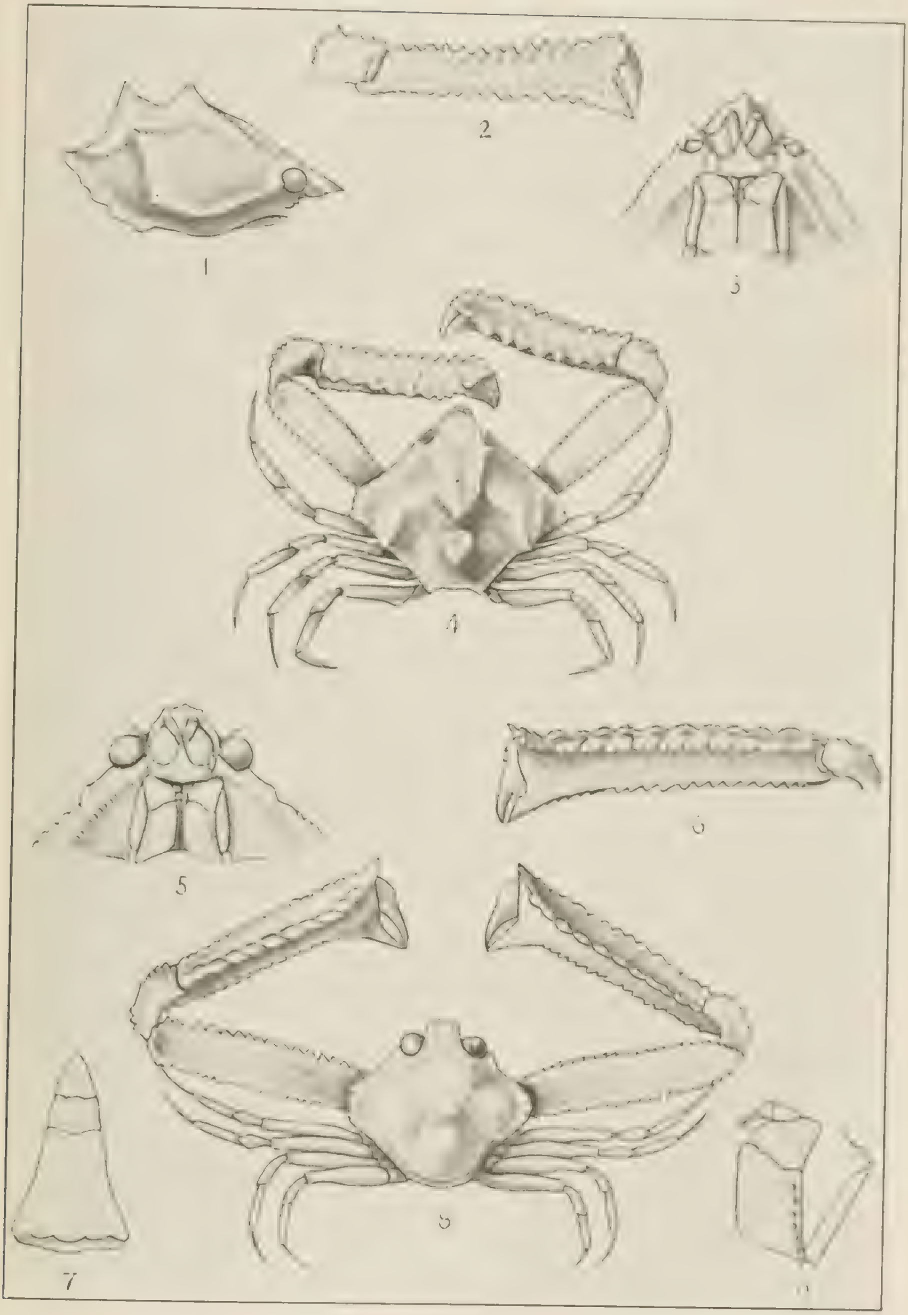
1, 2. Parthenope (Platylambrus) exilipes. (Page 523.) 3-5. Tutankhamen cristatipes. (Page 530)

For explanation of plate see page 597



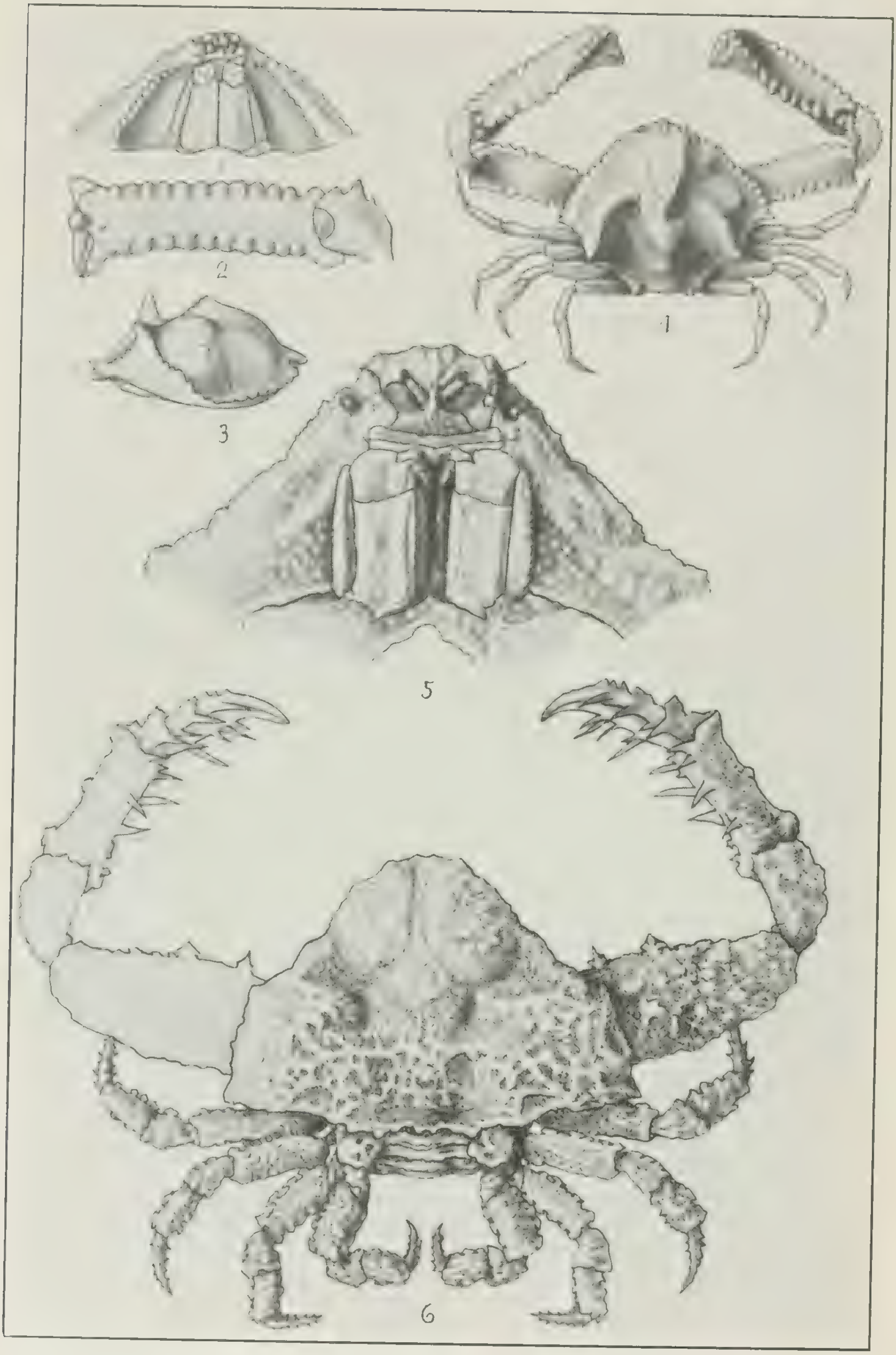
1–3. PARTHENOPE (PSEUDOLAMBRUS) TRIANGULA. (PAGE 528.) 4. P. (PLATYLAMBRUS) GUERINI. (PAGE 525)

FOR EXPLANATION OF PLATE SEE PAGE 597



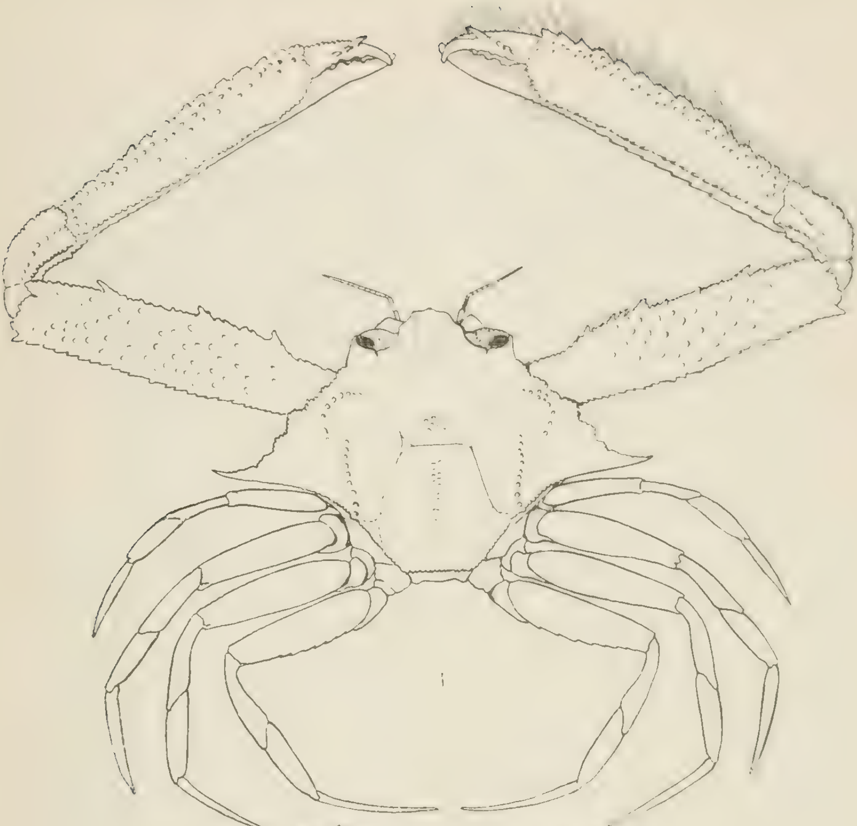
1–4. SOLENOLAMBRUS TYPICUS. (PAGE 537.) 5–9. S. TENELLUS. (PAGE 541.)

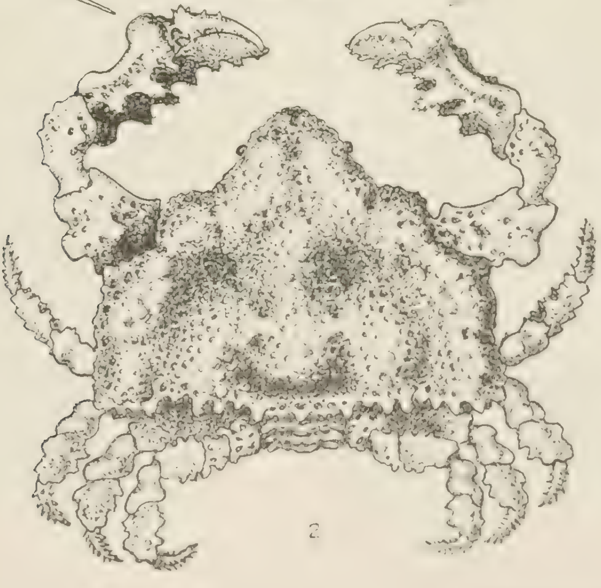
FOR EXPLANATION OF PLATE SEE PAGE 597



1–4. MESORHOEA BELLII. (PAGE 548.) 5, 6. THYROLAMBRUS ASTROIDES. (PAGE 532)

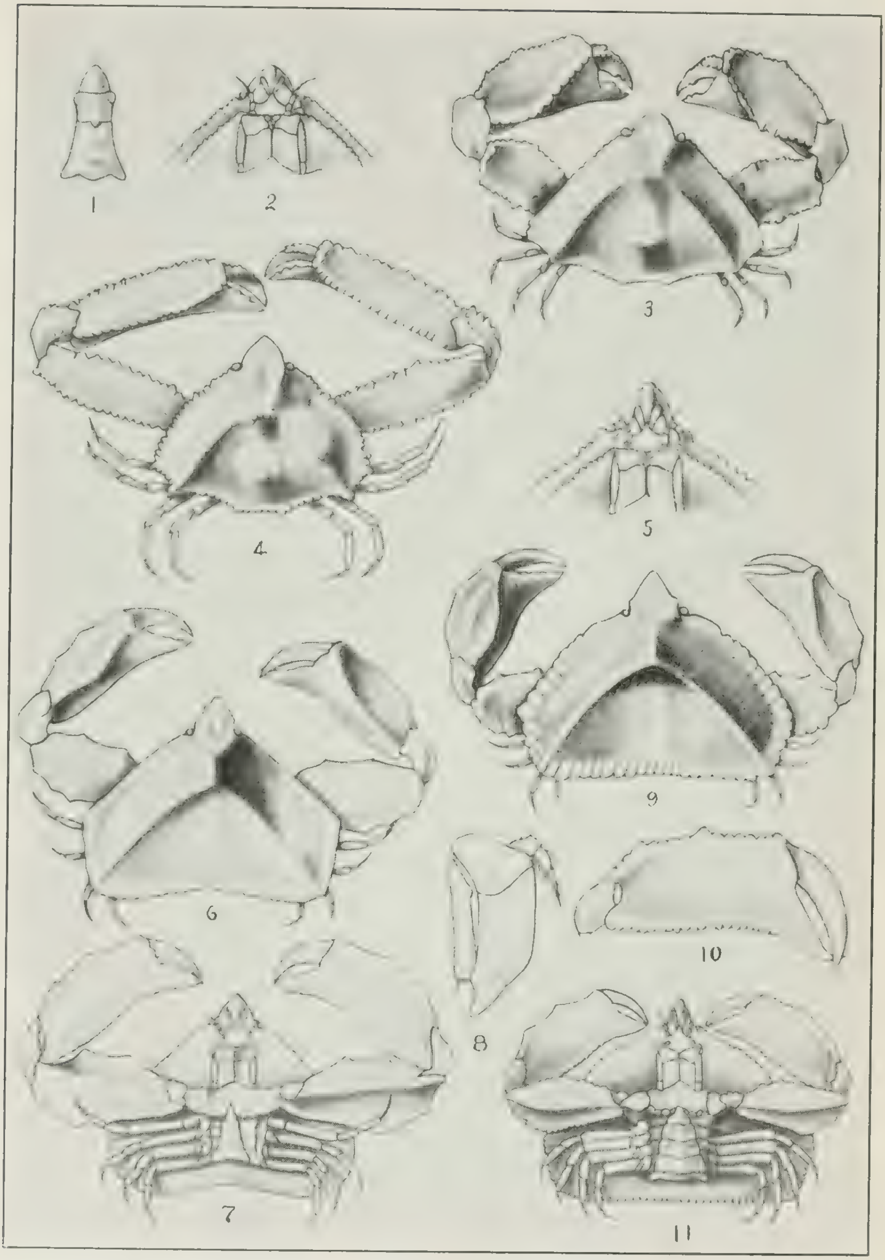
FOR EXPLANATION OF PLATE SEE PAGE 598





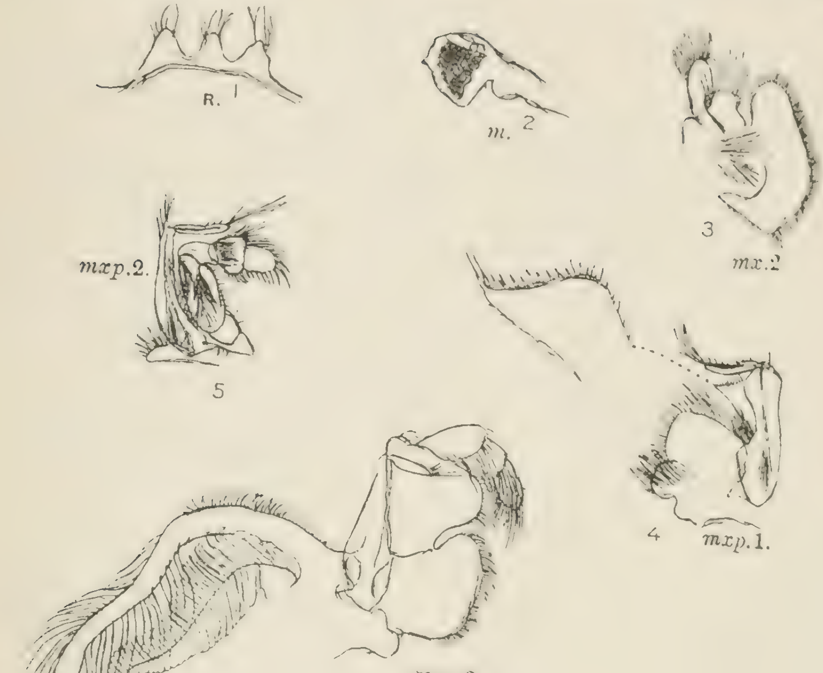
1. LEIOLAMBRUS NITIDUS. (PAGE 545.) 2. THYROLAMBRUS EROSUS. (PAGE 533)

FOR EXPLANATION OF PLATE SEE PAGE 593



1–3. Heterocrypta granulata. (Page 555.) 4, 5. H. macrobrachia. (Page 558.) 6–11. Cryptopodia concava. (Page 553)

For explanation of plate see page 598


R. 1
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3
mx.2
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mxp.1.
mxp.3.
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prp.
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7

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